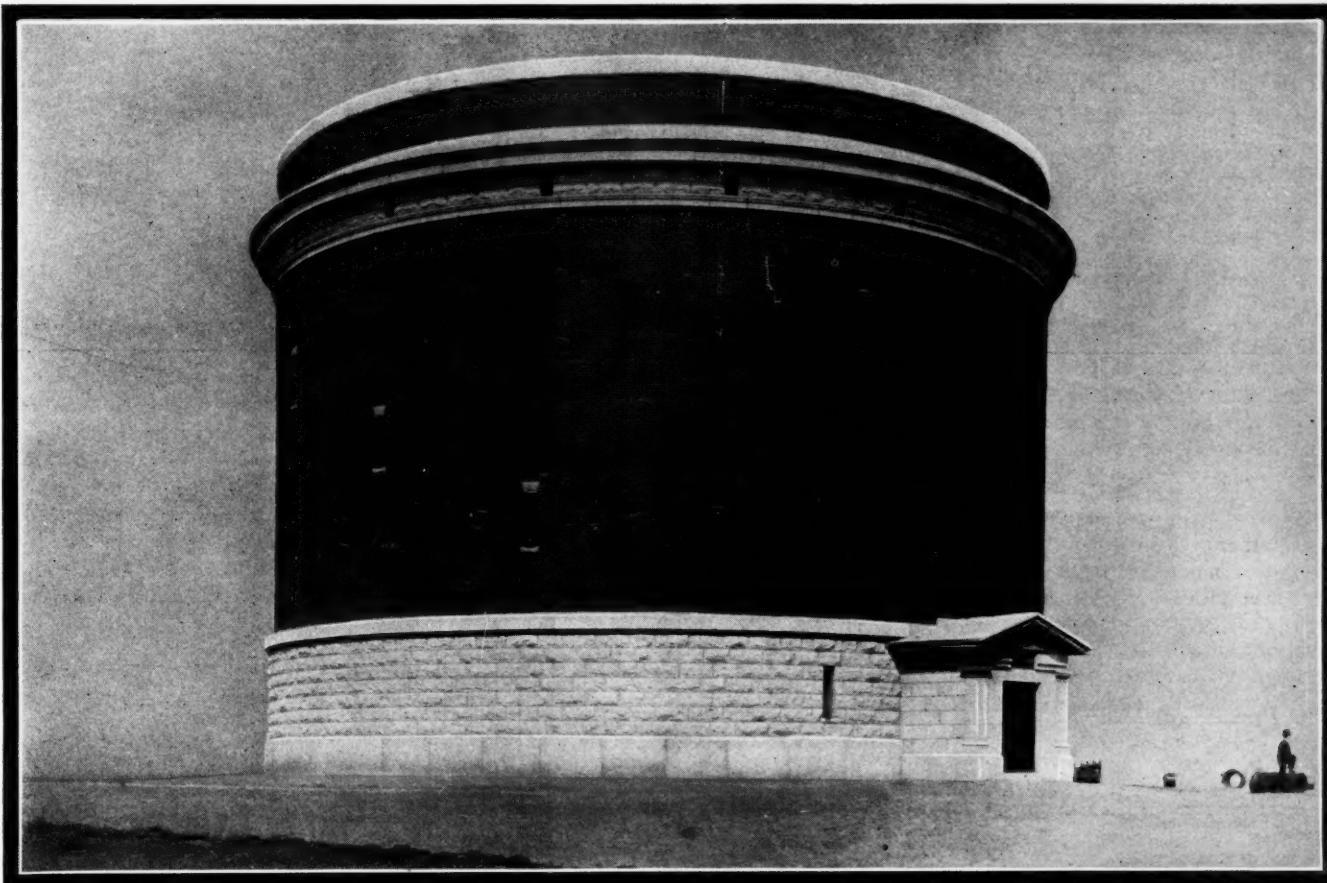


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No. 14



SOUTH SIDE OF COMPLETED STANDPIPE

ORNAMENTAL STANDPIPE AT SYRACUSE, N. Y.

Masonry Shell Enclosing Steel Tank—Artificial Stone and Rock-Faced Vitrified Brick Used—Dome-Shaped Roof of Steel and Concrete—Thickness of Steel, Riveting and Joint Efficiency

By M. B. PALMER, Assistant Engineer, Bureau of Water

THE city of Syracuse, while quite level in the business section, is partially surrounded by hills. The highlands lie on the northeast, southeast and southwest quarters. The business section is about 404 feet above sea level and the hilly portions range from 100 to 250 feet higher. The city distributing reservoir, known as Woodland reservoir, is located in the southwestern part and is 218 feet above the business section, which gives a hydrant pressure of over 90 pounds per square inch. The hilly section to the northeast is not as high as the others and fortunately is well served from the present reservoir. This is largely true of the section to the southwest also, except

the extreme southern part which is known as Elmwood. Syracuse University is located on the highland in the southeastern section and is surrounded by a large residential section, a large portion of which is too high to be served by the reservoir. The rapid growth of the university, causing a marked increase in the population of this quarter, has made a high-service system a necessity.

At the time the present water supply was installed, 1890-1895, partial plans were made for a high-service system to be supplied from a reservoir to be located a mile to the south of Woodland reservoir and 125 feet higher. In the fall of 1907

Summary of Results—Investigation of Standpipe Design

Course No.	Thickness of Plate Inches	Length of Plate Inches	Size of Rivet Inches	NUMBER OF RIVETS PER JOINT		Total Stress on Joint Pounds	SHEARING VALUE OF RIVETS POUNDS			Full Section of Plate Sq. In.	Bearing Value of Full Section Pounds	Net Section of Plate Sq. In.	Bearing Value of Net Section Pounds	Effic. of Joint %
				Single Shear	Double Shear		Single Shear	Double Shear	Total					
1	18/16	61 5/8	1 1/8	8	35	501,980	57,590	457,197	514,787	57.77	693,240	46.78	561,360	72.4
2	27/32	63 1/4	1	10	43	461,115	57,629	457,485	515,114	53.367	640,404	42.615	511,380	79.7
3	3/4	63 1/4	1	10	43	406,763	57,629	457,485	515,114	47.437	569,244	37.873	454,476	79.8
4	21/32	63	1	10	43	351,268	57,629	457,485	515,114	41.343	496,116	32.979	395,748	79.7
5	9/16	62 7/8	7/8	10	43	296,541	44,869	356,195	401,064	35.367	424,404	29.040	348,516	82.0
6	7/16	62 7/8	7/8	10	45	242,511	44,869	372,762	417,631	27.507	330,084	22.587	271,044	82.0
7	5/8	62 3/4	3/4	59	6	188,355	198,844	37,332	236,176	23.53	282,360	16,800	201,600	71.4
8	5/8	62 1/2	3/4	43	4	133,898	144,291	24,888	169,809	19.53	281,160	17,330	207,960	60.4
9	5/16	62 1/2	3/8	43	4	85,883	103,750	17,818	121,568	19.53	234,360	15.400	184,800	51.8
10	1/4	61 1/4	3/8	41	4	31,532	98,926	17,818	116,744	15.31	183,720	11.360	136,320	63.5

Allowable working stresses, lbs. per sq. in.—Plate, 12,000; Rivets, Single shear, 6,500; Double shear, 12,000.

surveys, borings and plans were made for this reservoir, but the project was changed to a standpipe located on a knoll immediately west of Woodland reservoir, for the following reasons:

It could be located on present reservoir grounds where the present keepers can operate and take care of it.

For the reservoir a new site and right-of-way a mile long would have to be purchased. The cost of about two miles of pipe and loss from evaporation and seepage in the reservoir would be saved.

The standpipe could be erected in one-quarter of the time necessary to build a reservoir.

The cost of a standpipe would be only \$45,000, as against \$330,000 for a reservoir and mains leading thereto.

The water surface would be 15 feet higher in the reservoir than in the standpipe. This additional head is not needed and would decrease the flow of conduit No. 2 by some 10 per cent.

The main argument in favor of the reservoir is the additional storage it would afford. This storage would be available for either high or low-service systems.

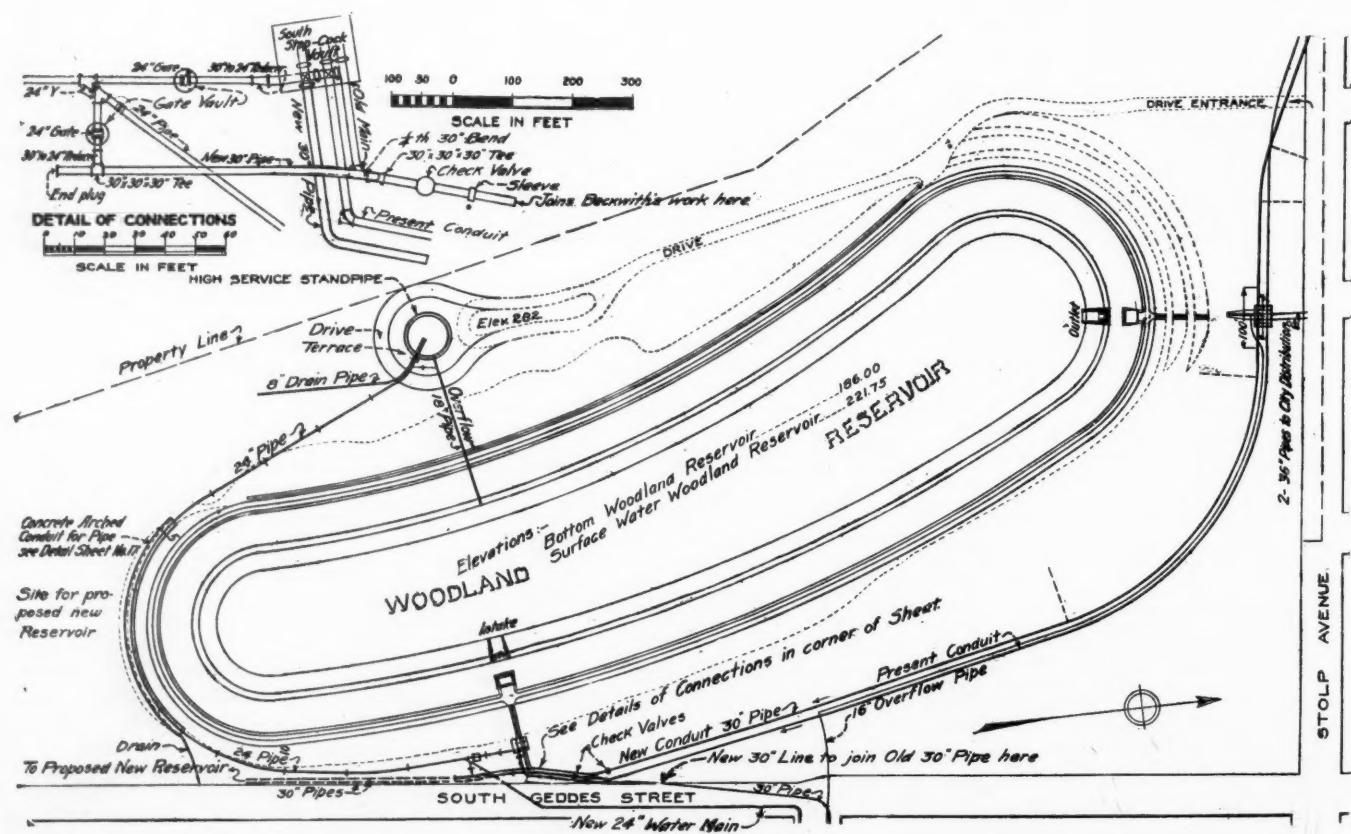
TYPE OF CONSTRUCTION

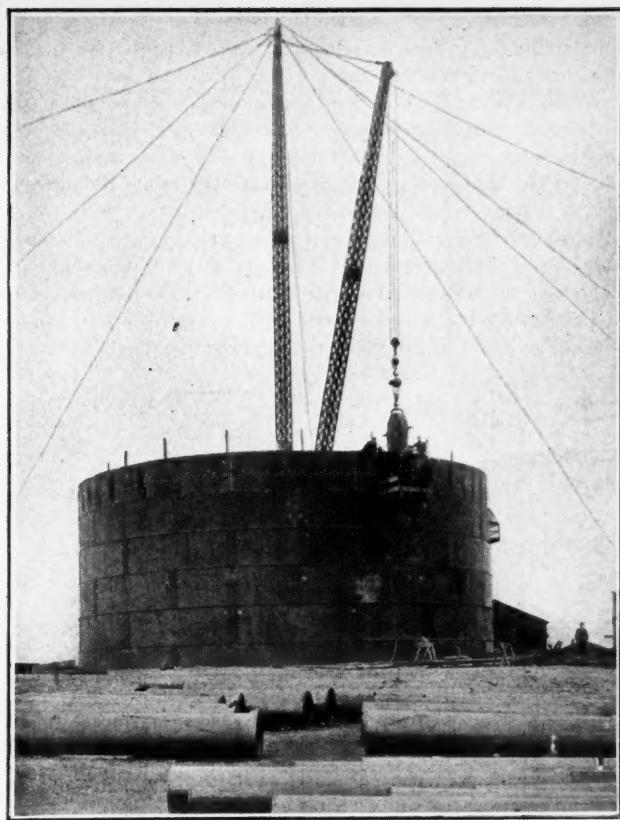
As soon as it was decided to build a standpipe, a study of these structures in general was made, covering especially the causes of numerous failures. It was found that most tanks that have failed were not enclosed and the water in them often

froze to great depths; also that in many tanks the steel was of a very poor grade, and in others the joints were poorly designed and poorly riveted. Some have been allowed to rust out until they were seemingly standing mainly through force of habit.

Since the increased application of reinforced concrete, several large tanks of this type have been built of this material, one at Attleboro, Mass., being 50 x 102 feet, and a letter from the superintendent says it is giving good satisfaction. A similar design for a reinforced concrete tank was made at the time the present steel tank was designed, but it was thought that the steel would be the safest structure.

An effort was made to secure the best results possible in the riveting of the joints. Most contractors prefer to use small pneumatic riveters, but unless extreme care is taken the rivet is not fully upset and does not fill the hole back near the head. Also if the plates are slightly sprung it is very difficult to draw them together tight without using a great many bolts and exercising much care. To overcome these two very probable weak points, we specified a jaw compression riveter that would be capable of exerting a pressure of 70 tons on each rivet. Several tank manufacturers refused to bid because they did not care to furnish this type of riveter. A Hanna type of





USING HANNA JAW RIVETER ON SIXTH COURSE. DERRICK MAST
100 FEET HIGH

jaw riveter weighing 5 tons was used, operated by compressed air at 100 pounds.

FOUNDATION

The ground on which the standpipe stands is a very hard dry clayey soil, probably capable of safely supporting a load of 3 to 4 tons per square foot. As the load under the tank is only 3,500 pounds per square foot, it was not deemed necessary to put in an elaborate foundation. The foundation under the tank is made of 1:3:6 concrete 2.5 feet thick and reinforced with $\frac{3}{4}$ -inch steel rods, running in each direction, spaced 2 feet on centers. The foundation wall under the casing tower is 7 feet high by $2\frac{1}{2}$ feet thick, widened out at the base to 6 feet so as to give about the same load per square foot on foundation as the tank. The two foundations were built separate to do away with shearing tendency around edge when the tank is alternately filled and emptied.

TANK

The steel tank is 66 feet in diameter and $51\frac{1}{4}$ feet high and is made up of nine courses of plates that build 5 feet each, and a top course which is $6\frac{1}{4}$ feet wide. Each course is made up of 12 plates. Courses lap alternately inside and outside. The bottom plates are $\frac{1}{2}$ inch thick, 6 feet wide and of variable length. The bottom plates are joined with a butt-strap joint. The thickness of the side plates was determined from the diagram, which is based on the formula

$$\text{Thickness (in inches)} = \frac{2.6 \text{ hd}}{ae}$$

Where h = head in feet,

d = diameter in feet,

a = safe working stress = 12,000 pounds,

e = efficiency of joints, assumed at 0.66.

The bottom course is $15/16$ inch thick, and the others of decreasing thickness, as shown on the diagram. Double butt strap joints triple riveted were used on the first six courses. Course No. 7 has triple riveted lap joints and the balance of the courses double riveted lap joints. The bottom plates are connected to the side plates by a $6 \times 6 \times \frac{3}{4}$ -inch angle double double rivet. The size of rivets used and efficiency of joints secured in different courses is shown in the diagram. As the

tank was likely to be exposed to wind storms before the casing tower was complete, a heavy angle was placed around the top, $6 \times 4 \times \frac{3}{4}$ inch, to prevent buckling by wind when the tank was empty.

INLET AND DRAIN PIPES

At the reservoir gate house a very complete system of cross-overs and valves has been installed so that either or both conduits can be made to flow direct into the city distributing mains, or into Woodland reservoir, or into the standpipe, or into a proposed new reservoir on a level with Woodland. Under normal conditions the conduit No. 1 flows into Woodland reservoir, and the flow of conduit No. 2 branches at the

COURSE	SIZE	RIVETS	JOINT EFF.	
			10	9
10	$\frac{5}{8}$	635	$\frac{1}{4}$	$\frac{1}{4}$
9	$\frac{5}{8}$	518	$\frac{5}{16}$	$\frac{5}{16}$
8	$\frac{3}{4}$	404	$\frac{3}{8}$	$\frac{3}{8}$
7	$\frac{3}{4}$	714	$\frac{7}{16}$	$\frac{7}{16}$
6	$\frac{7}{8}$	320	$\frac{9}{16}$	$\frac{9}{16}$
5	$\frac{7}{8}$	320	$\frac{11}{16}$	$\frac{11}{16}$
4	1	797	$\frac{13}{16}$	$\frac{13}{16}$
3	1	798	$\frac{15}{16}$	$\frac{15}{16}$
2	1	797	$\frac{17}{16}$	$\frac{17}{16}$
1	$1\frac{1}{8}$	724	$\frac{19}{16}$	$\frac{19}{16}$

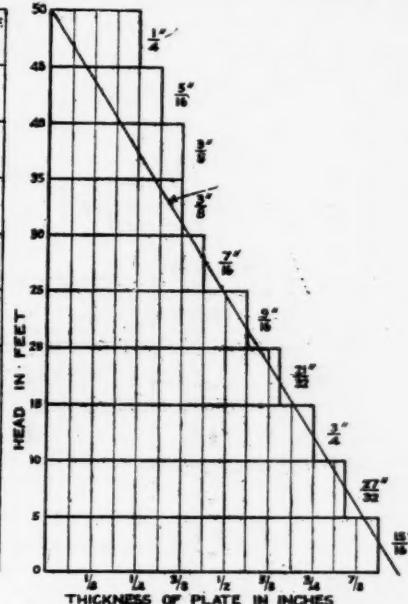
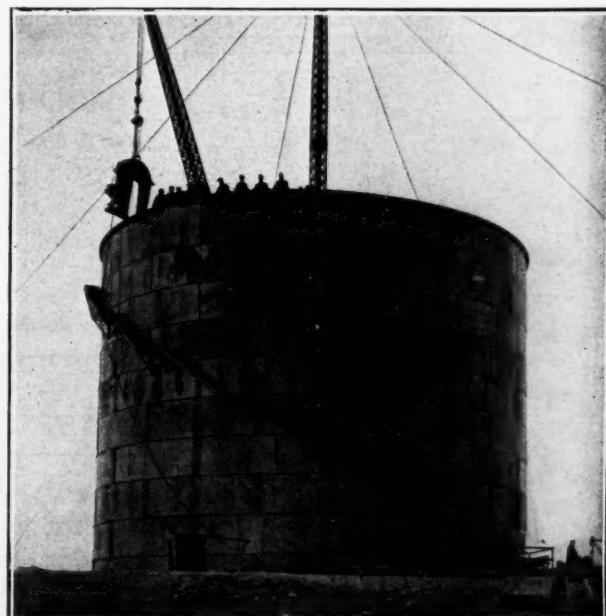


DIAGRAM OF THICKNESS OF PLATES AND RIVETING

reservoir and such as is then being consumed goes direct to the high service mains and the balance to the standpipe through a 24-inch main. This last main enters at the bottom of the tank and, when the tank is full, the water overflows at the top and descends through an 18-inch pipe into the reservoir. Whenever the conduit is shut off, the high-service system is at once supplied from the standpipe. An 8-inch drain pipe is provided for draining out the mud or sediment that may accumulate in the bottom of the standpipe. The end of the drain pipe is flush with the bottom to facilitate cleaning, while the inlet pipe ends 2 feet above the bottom.



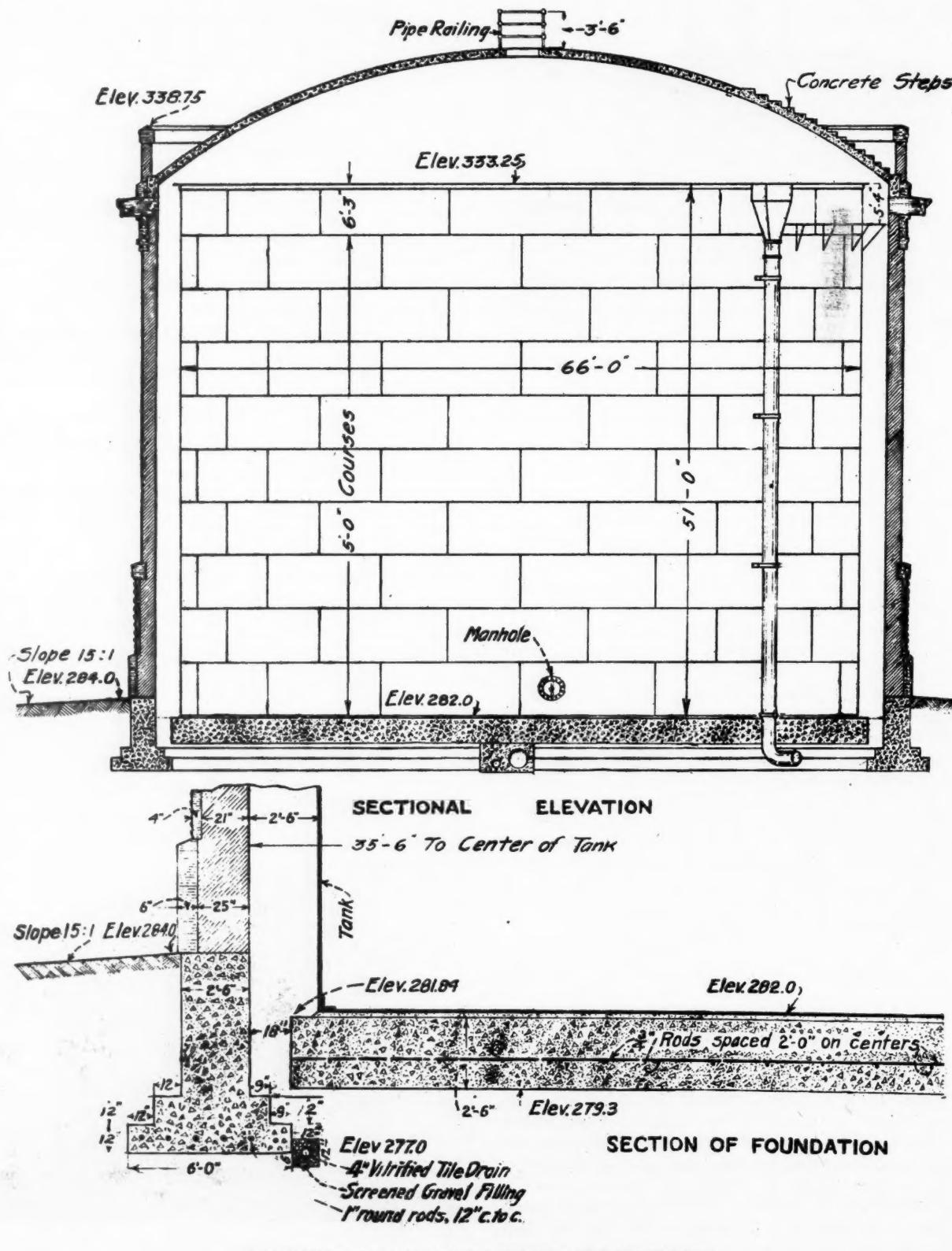
FINISHING TOP ANGLE

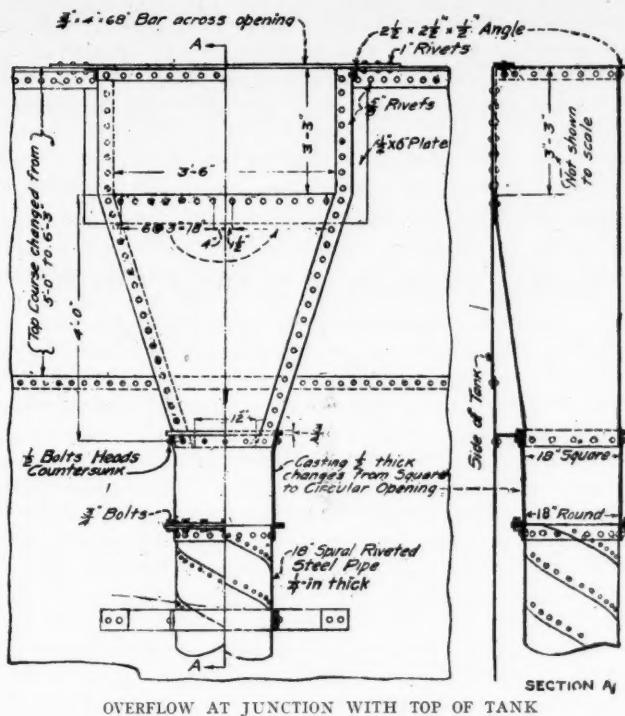
OVERFLOW

The overflow is placed on the outside of the tank so as to leave the inside a smooth cylinder, free from any parts to which ice can adhere. At the top of the tank is a rectangular opening in the side 3.5 feet wide by 3.25 feet high, through which the water flows into a steel hopper-shaped structure which reduces to an 18-inch spiral-riveted steel pipe, which, at the bottom of the standpipe, changes to an 18-inch cast iron which extends down to the reservoir. Probably the greatest flow into the standpipe will be 10,500,000 gallons per day, which will give a velocity of 9.2 feet per second in the overflow pipe, which is very high, but the line is only 300 feet long and down a very steep slope.

CASING TOWER

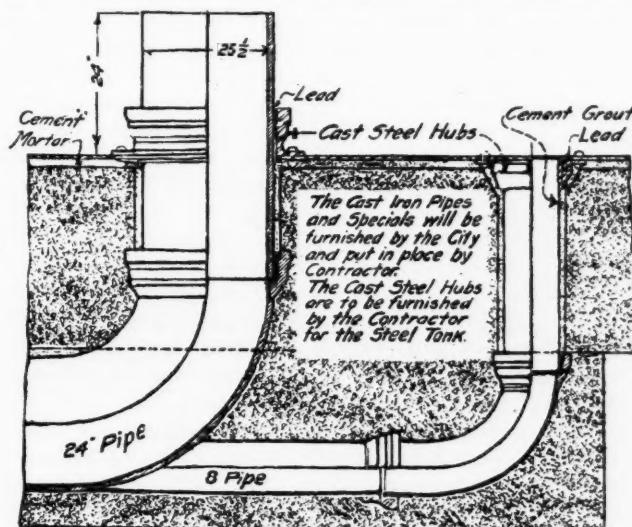
The standpipe is located where it is conspicuous for a long distance in all directions, and for this reason it was desirable to erect a structure of as pleasing a design as possible with a reasonable outlay of money. The high cost of a cut-stone structure was found to be prohibitive. Several studies were prepared for a masonry shell to enclose the tank, and the one adopted is believed to combine a maximum of stability, durability, massiveness and beauty at a minimum cost. The base, cornice and coping are of white cast stone, while the shaft and parapet are of rock-faced vitrified brick. Both the cast stone and vitrified brick are backed with common red brick of a good grade. The tower is circular in form, about 30 inches thick at





OVERFLOW AT JUNCTION WITH TOP OF TANK

the base and 20 inches in the brick part. The air space between the tank and brick backing is 30 inches, in which space there is a winding stairway to the roof. The cast stone are made from crushed white marble and Portland cement (Vulcanite brand), mixed wet in the proportions required to give maximum density and poured into sand molds. The smooth parts of the exterior surfaces are ground with a series of thin



DETAILS OF PIPE CONNECTIONS WITH BOTTOM OF TANK

carborundum wheels into small parallel grooves, six to the inch. The rock-faced surfaces are obtained by pitching off the edges the same as stone work. Metal ties are used to anchor the stone trimming to the backing wall.

ROOF

A roof of steel and concrete covers the structure. The steel frame of the roof is made up of I-beams bent in the arc of a circle, as shown on plans. Stiffened expanded metal similar to "hy-rib" was used to span from the lower web of one I-beam or rib to the next. The underside of this metal was plastered and then concrete was deposited on top so as to form a concrete dome-shaped roof. There is an opening 3 feet in diameter in the top of the dome, which will be surrounded by an iron railing. By means of a trapdoor above the top of the stairway, and steps on the outside of the domed roof, provision has been made to allow visitors to go to the top of the

dome from where a very fine view of the city and surrounding country is obtained.

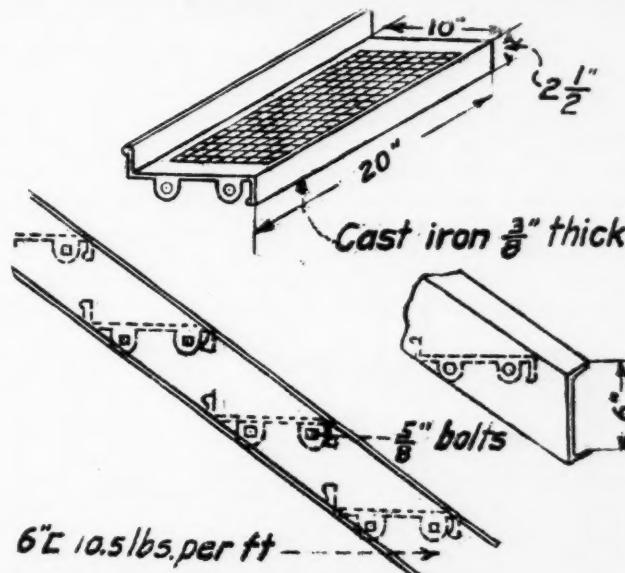
The contract for the steel work was let to Reeves Brothers, of Alliance, Ohio, and the foundation and casing tower to James E. Leamy & Company, of Syracuse. The cost of the steel was \$17,500 and of masonry, including grading, \$24,000. The steel tank was put into commission last February and the casing tower completed in September, 1910.

HIGH-SERVICE DISTRIBUTION

There being no existing mains that were suitable and also available for carrying the water from the reservoir to the two sections forming the high-service system, new lines were laid as follows: 24-inch pipe for 2,500 feet to where the Elmwood line branches off; 20-inch line from there to corner of Euclid and Comstock Avenues, a distance of 11,750 feet, and the Elmwood branch of 12-inch pipe, 4,586 feet long.

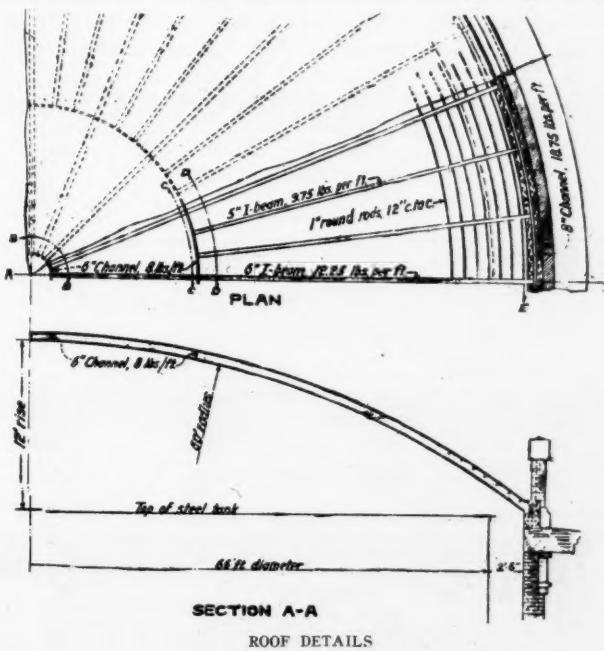
POPULATION PROBABLY TO BE SERVED

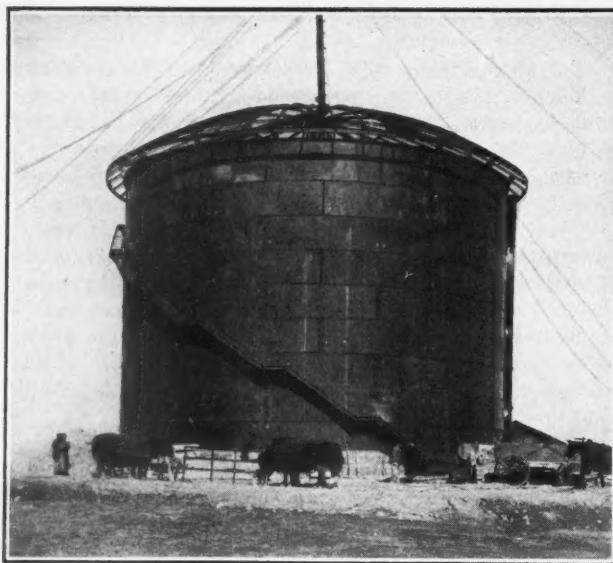
At Elmwood, on account of the topography, there is not very much chance to expand and the increase will come largely from settling more thickly the portion already laid out. There



DETAILS OF STEPS INSIDE CASING TOWER

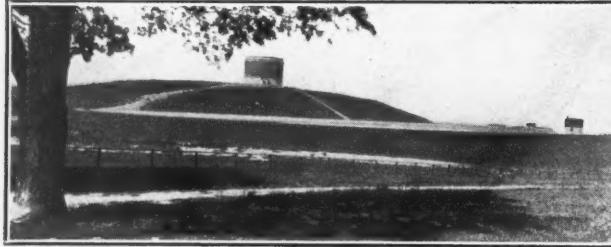
are now about 500 people living in this section and about 20 per cent of the lots have been built on. When fully built up the population will doubtless not exceed 3,000 people. At 50 gallons per capita the consumption will be 150,000 gallons per day, and at time of maximum consumption the flow might be three times the average rate, or at a rate of 450,000 gallons per





ROOF FRAME IN PLACE. MASONRY CASING STARTED. DERRICK ON TOP TO LIFT LARGE STONE TRIMMINGS

day. At this rate of flow the loss of head will be only about $2\frac{1}{2}$ feet per mile. The University section, which is served by the high-pressure service, now has a population of about 5,000 and will doubtless reach 20,000 inside of 25 years. At 50 gallons per capita this will call for a supply of 1,000,000 gallons per day, and with a large fire at time of maximum consumption, the mains would need to supply water at the rate of 2,000,000 gallons per day. At this rate the loss of head in



GENERAL VIEW OF RESERVOIR AND STANDPIPE. RESERVOIR GATE HOUSE AT RIGHT

the 20-inch main would be only about 6 feet and in the whole line from the reservoir only about 7 feet.

It was stated just above that the present population of the high-service sections is about 5,500 and it is estimated that the consumption is not over 40 gallons per capita, thus making the total consumption about 220,000 gallons per day.



SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E
DETAILS OF CONSTRUCTION

The available capacity of the standpipe is 1,200,000 gallons, so that at present it would last for about six days in case of accident to the conduit line. In case the supply could not be resumed at once, the supply in the standpipe could be made to last for a week or more by supplying all streets where it could possibly be done from the low-service system. (The two systems are connected in a great many places and separated by closing gate valves in the street mains.)

MODERN PRACTICE IN GARBAGE DISPOSAL

A PAPER with the above title was read before the American Public Health Association last month by Mr. Rudolph Hering, in which he reviewed the history of garbage disposal, beginning twenty-three years ago with a committee appointed by that association to report upon the subject.

Considering the general methods of disposing of garbage he discusses, first, the feeding of this to animals—generally pigs. "Feeding fresh and wholesome garbage, which is collected from hotels, eating houses and private residences will always remain a legitimate and, within certain limits of distance, also an economical disposal. In small and semi-country towns it is the prevailing one. But as soon as the local conditions make the safety of such a disposal questionable, other means must be adopted. There are two further properties of kitchen garbage which have value. One is its content of grease, roughly from 2 to 4 per cent of its weight; and the other is its carbon content of about 4 per cent and some volatile matter, which both have fuel value."

Of the reduction process, by which the grease is utilized, he stated: "The works where this process is conducted can be kept fairly inoffensive, if sufficient money is expended for the purpose; but experience has indicated particularly where private profit was at stake, that these works are quite frequently productive of offensive odors. It is a proper and usual precaution to place them quite a distance from inhabited territory. They must therefore be debited with the increased cost of a longer haul than that required for incineration, which can be conducted without offense much more easily than reduction. Attention should be called also to the fact that the process of reduction refers only to kitchen garbage, and that all other classes of municipal refuse remain and must have other ways and places of disposal."

Concerning the burial in shallow trenches Mr. Hering stated: "From a sanitary standpoint, burial is not objectionable because it prevents pathogenic germs from spreading, and facilitates decomposition without odor. Depending upon the character of the soil, the offensive organic material disappears within three or four years if the burial is not too deep. A good earth cover of about 12 inches usually allows maximum speed of decomposition without the escape of foul-smelling gases. The city of Berlin disposes of most of her garbage by this method, although the large extent of area and labor required is causing a search for other means."

Concerning general rubbish he stated that, contrary to the general impression, this material is liable to contain more pathogenic organisms than any other class of refuse; especially because bedding, sweepings and other discarded matter from sick-rooms frequently reach the municipal rubbish pile. However, very few cases of diseased contamination have been traced to this cause. The burning of rubbish in the open at the dump is quite offensive, as is also the use of it in making land, because of the irregular and large shrinkage and the dust nuisance occasioned.

Certain of the methods of disposal require a separation of city wastes into two or three classes, while incineration does not require such separation. Several of the large cities, including New York, Chicago and Columbus, secure quite complete separation of materials. The borough of Richmond, New York; Seattle, Wash., and Montreal and Vancouver, Canada, have mixed collection and modern incinerators; and Milwaukee has the latter but still collects the garbage separately.

PIPE JOINTS FOR HIGH PRESSURES

Tests of Twenty Styles for the San Francisco Fire Protection System—Groove in Spigot End Beneficial—Pressures Required to Produce Leaks

IN connection with the high-pressure fire protection system which has been constructed by San Francisco, Cal., and before preparing definite specifications for the pipes to be used, a considerable number of tests were made of several forms of pipe joints to determine which were best suited for the severe pressure to which the pipes were to be subjected. Twenty different forms were designed and castings made of each and these were tested by the city engineering department. A number of these were eliminated early in the tests as being distinctly inferior to the remainder. The others are shown in the accompanying illustrations.

It was considered that the following requirements should be met by the form of joint:

1. Great tensile strength endwise.
2. Yielding of joint under this strain must be by flow and not by shearing.
3. Maximum flexibility consistent with strength.

The castings tested consisted of 8-inch pipes or plugs supplied with the shapes of bell and spigot to be experimented with. The joints were caulked and tested under pressures varying from 300 pounds per square inch to 2,750 pounds. Certain of the joints were heated before the pouring of the lead in order that the latter might flow thoroughly into the various recesses.

The accompanying table shows the final results of the tests, giving the amount of pressure in pounds per square inch necessary to start a leak in the joint, and that necessary to separate the joint or blow out the plug used in making the experiment. The joints are arranged in the order of the pressure necessary to accomplish the latter.

Pressure in Pounds per Square Inch

Joint No.	Start of Leakage	Blow out of Plug
15	390	390
2	355	400
1	320	450
6	500	880
5	410	1,040
8	500	1,290
4	350	1,400
7	480	1,460
17	1,100	2,500
19	900	2,750
19A	2,750	2,750

Tests were also made to determine the leakage with and without endwise displacement of the joints. The final results were:

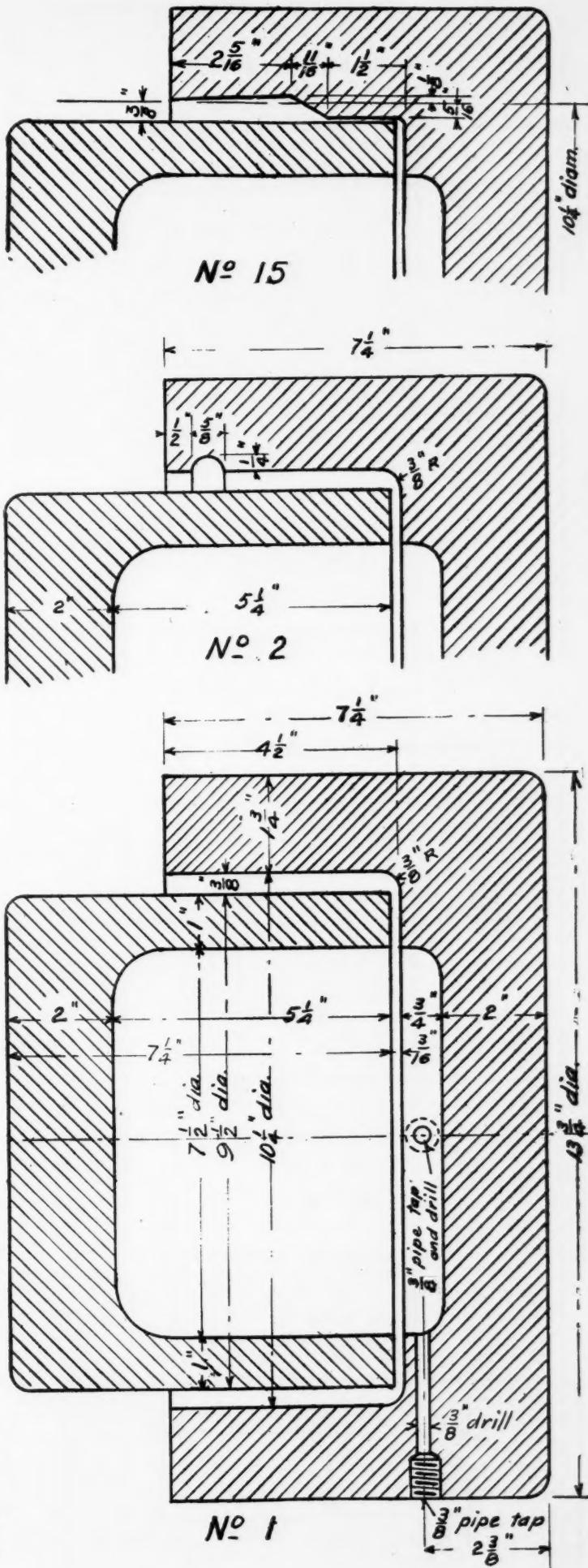
Without Displacement of Joint.—Joint No. 19, at a pressure five times greater than the static service pressure, or 1,500 lbs. per square inch, leaked only a few drops at first, ceasing within 30 minutes.

Under Lateral Displacement.—A series of tests were made after displacing the various types of joints laterally, and the rate of leakage was measured when displaced. In these tests the pressure applied was 300 pounds per square inch. The best results were obtained with joint No. 17, which scarcely leaked at all after it had been laterally displaced for one and one-half inches. After this joint had been pressed in and out fifteen times with a movement of $1\frac{1}{2}$ inches each time, the rate of leakage from the two sides of the joint was less than four gallons per minute.

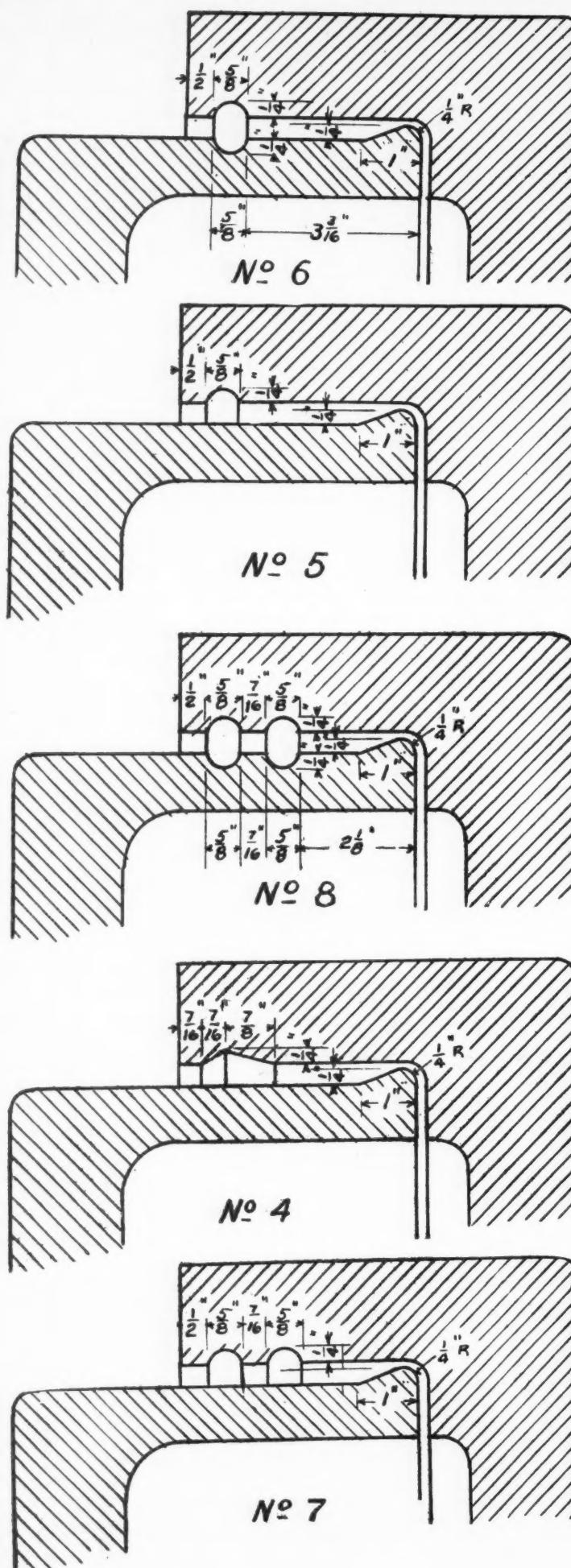
Joint No. 17 gave the best results in the displacement tests, but joint No. 19A also showed very small leakage under these same conditions and was superior in this respect to any of the other joints tried except No. 17.

The benefit of the groove in the spigot end was brought out by these tests. Joint No. 19, under these conditions, leaked materially more than joint No. 19A when displaced considerably.

A series of tests of this joint was made to determine the



SECTIONS OF JOINTS TESTED

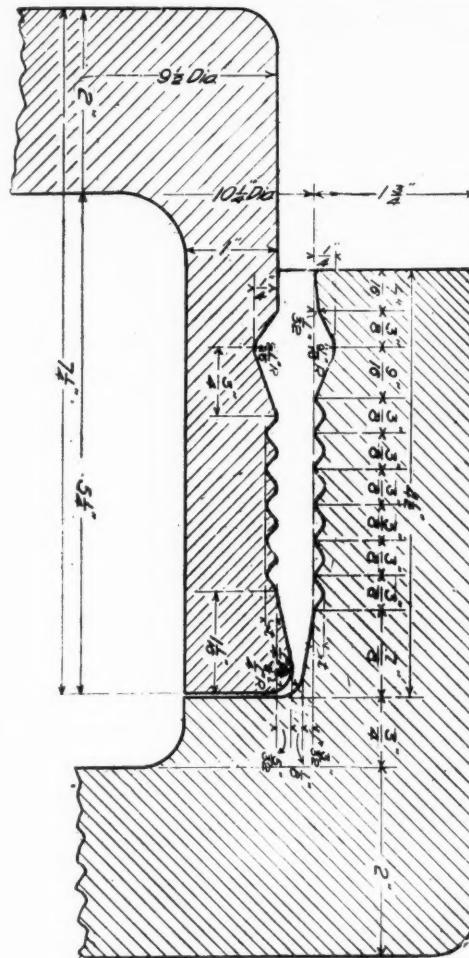


SECTIONS OF JOINTS TESTED

effect of the distortion of the joint due to settlement of pipeline or other movement.

Joint No. 19A, when the plug was so moved to correspond to a deflection of $7\frac{1}{2}$ in. in a 12-foot length of pipe, showed an extremely small leakage.

Joint No. 19 was found to best answer all requirements, and was adopted as the final form for both cast-iron pipe and specials and for cast-steel specials. This latter material, by reason of its greater strength, will be used in sections of the



JOINT NO. 17

city where settlements and displacements reach their maximum, or on artificially filled ground. These sections are also provided with gate valves to cut them out, either by blocks or sections, as contingencies may require.

MUNICIPAL CODE FOR WEST VIRGINIA

SOME time ago the Governor of West Virginia appointed a Municipal Code Commission, which has recently reported to him, its recommendations being in the form of a bill creating a municipal code of West Virginia. It naturally considered the commission plan, of which it considered the points of merit to be:

First, the election of a few people to office. The short ballot, by which the fight is centered on the important offices.

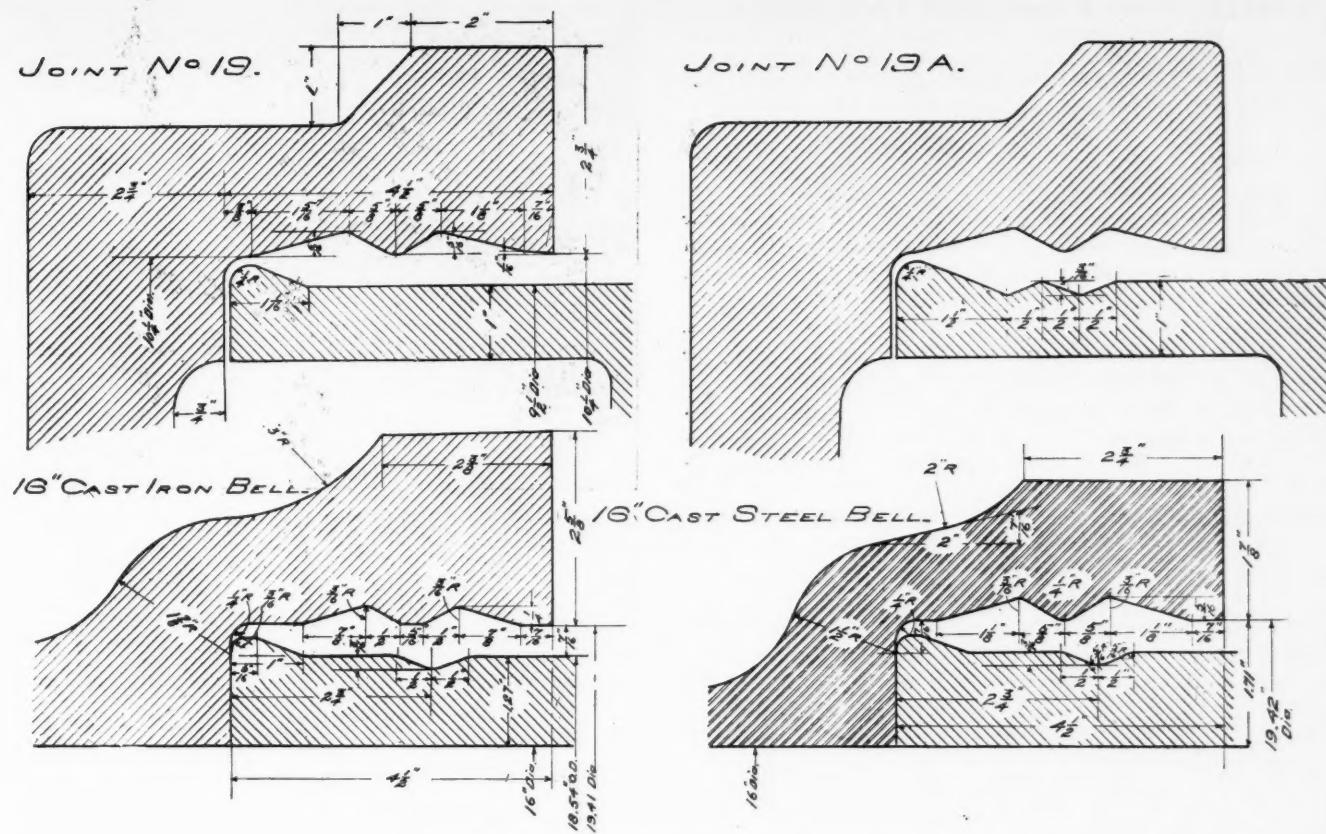
Second, the division of the city into a few departments and placing a man at the head of each, thereby holding him absolutely responsible for its running.

Third, in some places the non-partisan feature of nominating and electing officers.

In drawing up its code the Commission endeavored to attain three features:

First, that charters and amendments thereto for municipalities might be procurable without special acts of the Legislature.

Second, that a wholesome amount of home rule be provided. Each community may fix the details of its charter, and can



JOINTS NOS. 19 AND 19A, SAN FRANCISCO TESTS

change the same to conform to its wishes by a vote of the people, providing such change does not conflict with the general provisions of the code.

Third, certain general provisions applicable alike to all municipalities of their class; such as, division of municipalities into classes; general powers covering almost every conceivable requirement; an up-to-date requisition law; one election day for all the municipalities; fixing elective offices and terms and qualifications of officers; regulating the issuance and sale of bonds; assessments for sewer and street construction; consolidating municipalities and annexing new territory. In many respects the code adopts the general principles of Commission Government, especially for the smaller cities, and might be considered as a modified commission form of government.

OZONE IN FRANCE

WRITING from Nice, France, U. S. Consul Hunter gives a brief description of the ozone water sterilization plant used for purifying the public supply of that city. Two plants were built in 1909, one with a capacity of about 3,400,000 gallons a day and the other with double that. Each of these is composed of two systems in duplicate to insure continuous action. He reports that a new plant is under construction which will have sufficient capacity to supply all the towns and cities between Nice and Mentone, a distance of 24 miles.

The water to be sterilized operates turbines used for generating the necessary electric current. This is produced at 110 volts which is transformed into an alternating current of 17,000 volts, at which potential it is used. There are five so-called batteries, each consisting of three vertical copper plates two feet square and 1 1/2 inches thick, with a space of 8 inches between them; in each of which spaces is a pair of glass sheets, between which the electric discharge takes place and the air is drawn by a suction machine. The ozonized air is passed through a vertical vitrified pipe containing charcoal dust and pieces of cement. To bring the water and ozone in contact, the former, under a head of 12 feet, is sprayed through openings in 1-inch pipes into a chamber filled with the ozonized air. The water then flows through 3 feet of pebbles from which it

drops like rain to the bottom of a tank, passing, in so doing, through a strong current of ozone, a part of which is absorbed by it.

UPLIFT WORK IN ERFURT

ERFURT, Germany, which has a population of about 120,000, maintains a number of public bath houses along the river Gera, which is exceedingly free from pollution. The largest one is divided into free and pay compartments, the admission to the latter being 2 1/2 cents with an additional charge of 1 cent for soap and towel. Competent instructors in swimming are present. Along the same river is a public park kept in excellent order by landscape gardeners and laborers. For public recreation the city owns and maintains a forest extending for a number of miles into the surrounding country, in which are summer houses, benches and tables at intervals which are free to all. There are also children's playgrounds. In general flowers must not be picked in the city parks, but in the forest park—the Steiger Wald—the public may gather flowers at will. There are also tracts enclosed and fitted up as playgrounds for athletic clubs, certain hours being reserved for each club, for which an annual fee of \$1.20 a year is charged.

During July and August the poor children of the city are taken to vacation camps, where each receives four weeks of outing free of cost for food or other essentials; the children being accompanied by school teachers or other competent adults. Part of the expense is met by the city and part by a charitable organization.

The city also owns a municipal opera and play house which it leases, one of the conditions being that there shall be given one suitable play or opera each week during the winter to which the price of admission shall not be more than ten cents with half price to children; the plays usually including productions of Shakespeare and Schiller and the like. Public authorities and private associations also arrange for lectures and concerts to which the prices of admission range from 2 1/2 to 12 cents, and free concerts are given each Sunday by one of the military bands.

CONDITION OF MANHATTAN SEWERS

Defects Found During Inspection by Metropolitan Sewerage Commission—Erosion, Deposits, Odors, Obstructions, Defective Brick Work and Distortion

EARLY in the year 1910, an inspection of the principal sewers of Manhattan Borough, New York City, was made by the Metropolitan Commission in co-operation with the Bureau of Sewers. The conditions found are briefly summarized in the following:

The sewers were entered at two hundred and forty-six places. The results were recorded on blank forms supplied for the purpose. It was found that in many cases there had been a settlement of the sewer resulting in a crack in the center of the arch. House connections to the sewers were often poorly made and bricks had fallen out around the pipe at the connection. The marginal sewers were in need of cleaning. Black mud varying in depth up to 3 feet was found, which in many cases was in a putrefactive condition, giving off bubbles of foul gases when disturbed. A few serious cases of erosion were found. The grade of many sewers was flat and not sufficient to prevent fouling and septic action. In several cases bad breaks were discovered.

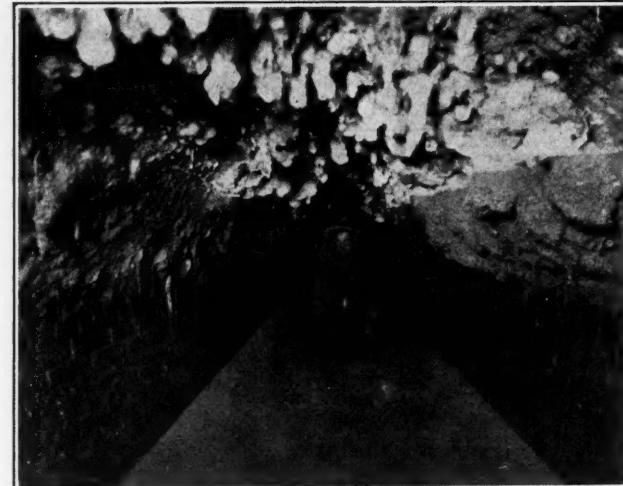
The principal trunk sewers and their important connections were inspected at intervals of about two blocks. It was the custom to enter a manhole at or near a street intersection and go through the sewer to the next manhole, usually about 60 feet. One of the men of the Bureau of Sewers went ahead of the observer and one followed in the rear. An electric flash light was used to illuminate the sewer and a small 2-foot iron rod was carried to make examinations of the invert and sides of the sewer.

Erosion.—Few cases where the bricks of the invert were actually worn away were found. In a few places in the upper west side of Manhattan the up-stream edges of the bricks were rounded off as a result of the high velocity of sewage.

In a large number of the sewers the mortar was worn from the joints in the brickwork of the invert. Sometimes the mortar has been worn away only to a slight depth, while at other places it has been cut out by the sewage to the full depth of the brick.

Steam.—Two well defined areas, in which steam is present, exist. These areas occur in the parts of the city where there are large buildings used for office and business purposes. In these areas steam almost constantly issues from the manholes in the streets and often from the openings to the catch basins, and is a nuisance to passers-by and a source of danger to employees of the sewer department. It is impossible to inspect some sewers because of the presence of steam.

Deposits.—The grade of many of the Manhattan sewers is necessarily flat and in most of these deposits were found. The marginal sewers contain foul black mud and those in the lower east side of Manhattan Island carry much household waste consisting of paper, rags, grease, etc. In several of the Harlem



ACCUMULATIONS OF GREASE AND MOLD IN SEWER

sewers there are extensive deposits of marble dust from stone-working plants. In the Nagle avenue sewer there is a deposit of sand and gravel about 36 inches deep which is said to have been washed in during the construction of the sewer.

In this connection it is important to note that sticks, stones, etc., have evidently been dumped through manholes when snow has been disposed of by putting it into the sewers. Many examples were found where material introduced in this way made an obstruction and held back lighter material, thus forming a deposit of such which otherwise would not exist.

It was observed in some cases that there were deposits of material that looked like street cleanings beneath manholes and that there was less depth of deposit in the sewers at points removed from them. This suggested that the employees of the Street Cleaning Department had disposed of the sweepings from the streets by putting them in the sewers.

Extensive deposits of grease were found covering the arch of many of the sewers of the lower east side; this grease in many cases was hung with festoons of mold, called "lace curtains" by the sewer men from their draping effect and white color. This deposit had a maximum thickness of 1 foot in the Jefferson street sewer at Water street.

In the Washington Heights district there is an extensive infiltration of ground water which results in the deposit of a reddish brown material on the sides and arch of the sewer. The maximum thickness of this deposit is about 1 inch.

Of the 246 inspections, grease was found abundant in 17, deposits apparently formed by snow being dumped into the sewers were found in 5, other deposits were found in 34, and old deposits in 16 more. The grease was found in thickness from 1 to 10 inches. Where it was suspected that snow had been dumped, stones and rags 1 foot deep were found at one manhole, an 8-pound flagstone in another, a 5-pound rock in another, a dam 18 inches high in a fourth and 1 foot of stone and debris in the fifth. The miscellaneous deposits consisted in the majority of cases of mud or of sand and gravel, in many cases to a depth of 2 or 3 feet. Among other articles noticed were cinders, bricks, mortar, rags, marble dust, etc. At one point beneath a catch basin connection was found a pile of mortar and brick 18 inches high.

Odors.—Except where there was some local odor that was very marked, the odor encountered was the distinctive, musty smell usually found in sewers. In the Canal street sewer an odor of banana oil was very noticeable. Illuminating gas was present in many cases, oftentimes in such large amounts that it was unsafe to light a candle. In some of the sewers containing putrefactive mud, the odor of hydrogen sulphide was recognized. A fecal odor was noticed chiefly in the sewers of the lower east side, in which district the sewage is very concentrated.

Aside from the odors of illuminating gas and sulphureted

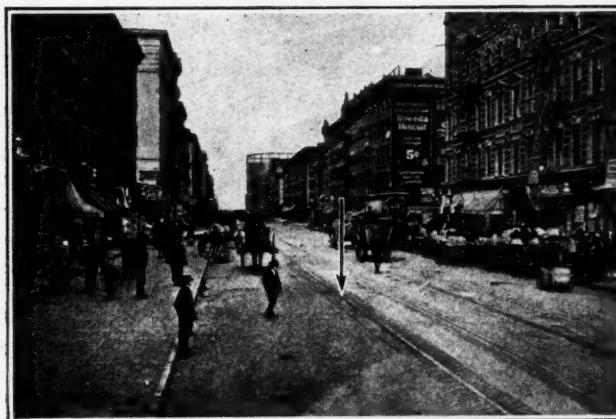


STEAM ESCAPING FROM MANHOLE

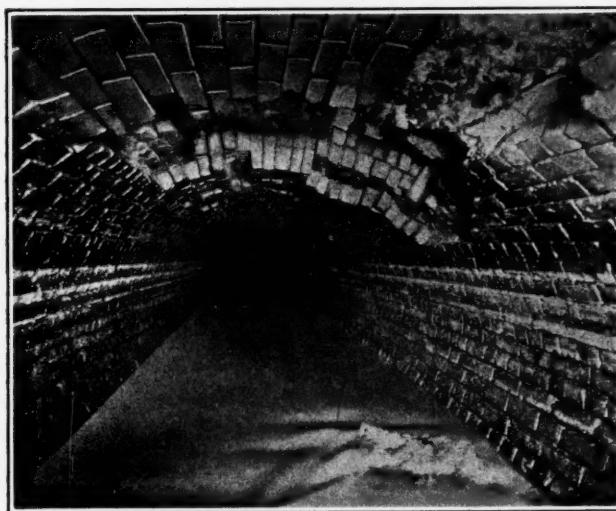
hydrogen and other gases of sewage decomposition some of the odors noticed strongly resembled hops and brewery wastes, others gasoline (which was quite strong in some cases), and in one case, as stated, a distinct banana oil smell.

Obstructions.—In some cases water and gas pipes pierce the sewers. At Sixth avenue and Ninth street the sewer is obstructed by a 20-inch main and a 12-inch pipe directly below it. On Twenty-sixth street east of Sixth avenue about 75 per cent of the sewer area is taken up by an obstruction of iron beams and brickwork. On Tenth avenue near Twenty-third street the wood forms put in to build the arch of the sewer and a curtain wall supporting them were found still in place and nearly obstructing the whole sewer area.

Cracks.—A large number of the sewers inspected had cracks in the center of the arch. In a few cases, as on Forty-second street near Eleventh avenue, there were two longitudinal cracks in the arch about 2 feet apart, resulting in a depression and flattening of the brickwork between the two parallel cracks.



LOCATION OF SEWER SHOWN IN CUT BELOW



DANGEROUS BRICK WORK IN SEWER

The cracks varied from a width scarcely discernible up to a width of $1\frac{1}{2}$ inches. The cracks were usually widest in the circular sewers, though there were large cracks in many of those with an egg-shaped cross-section. Most of the cracks were in the arch and were $\frac{1}{4}$ to $\frac{1}{2}$ inch wide. In one case a crack was found in the top of a 15-inch vitrified pipe.

Defective Brickwork.—In many cases the cracks previously mentioned have resulted in such an excessive spreading of the joints that a strip two or three bricks wide of the inner ring of the arch has dropped out.

Several cases were observed in which both rings of the brick-work have fallen in as well as has the material of the street above, exposing the granite paving blocks.

On Eighth avenue at Eighty-ninth street a break with an area of about 2 square feet in the side of the sewer was found;

leading from it were tunnels about 3 inches in diameter, presumably made by sewer rats. Several other cases were observed where the side of the sewer was pierced by rat holes, thus forming the beginning of a still larger break.

Among the descriptions of defects found were the following: "Patches 15 square feet in area out of arch and sides." "Three or four bricks have dropped out of arch, 415-pound blocks from side of sewer have fallen out and lie on invert." "Both rings gone in two places; combined area about 15 square feet. Inner ring gone in many places." "Two square feet of invert gone (both rings). Bricks gone from arch."

Distortion.—Distortions of the original form of the sewers were numerous. The circular brick sewers were more distorted than those with an egg-shaped cross section. The circular brick sewer on Twenty-sixth street near Eighth avenue is a fair example of distortion of an old circular sewer. Two measurements of the sewer about 20 feet apart were made as shown in the following table:

	1st.	2nd.
Height	42 inches.	45 inches.
Width	52 "	52 "
Width greater than height due to distortion....	10 "	7 "

In many cases the distortion has apparently been caused by putting a new arch on an old invert, the result oftentimes being a cross-section that is not symmetrical or as regular in outline as it should be.

The distortion sometimes exists without any cracks of noticeable size and seems to be the result of a small amount of spreading or compression at all joints.

Catch Basins.—Some catch basins were found to contain deposits of black mud and street sweepings up to depths of 5 feet. Other basins were clean and contained no deposits. One catch basin was found to be completely full of pieces of stone from a stone-working plant nearby. Of thirty-five catch basins inspected, only seven were reported as clean or with but slight deposits. The majority of them were found to contain from 3 inches to 2 feet of deposit. Five contained three or more feet and eleven 2 to $2\frac{1}{2}$ feet.

TRAVEL IN GREAT CITIES

In a recent letter commenting upon the relative populations of large cities as published by the Census Bureau, Mr. Rudolph Hering calls attention to the fact that these populations apply to the political boundaries of the city and do not necessarily apply to the actual populations which virtually make up the city as a business unit. Said Mr. Hering, "City rapid transit cares nothing for the artificial boundaries, but solely for the actual populations grouped around a large metropolitan business center. As giving a better idea of the real size of cities than the usual census figures I append those relating to actual population, and add the rides per annum credited to the population, including steam, electric and horse railways, omnibuses, carriages and ferries."

These figures refer to 1907. Mr. Hering states that since 1890 Greater New York has been growing the fastest of the seven cities; then follow in order Greater London, Greater Berlin, Chicago, Greater Boston, Greater Paris, and Philadelphia; the word "greater" implying the consideration of the actual rather than of the political boundary of the city.

"As Greater Berlin is growing much faster than Greater Paris, it soon will be, if it is not already, larger. As Greater Boston is growing faster than Philadelphia and has already almost the same population, it will overtake it before long. The figures also show that in Greater Boston the inhabitants ride more, and in Greater Paris less, than in any other large city."

City.	Population in Millions for 1907.	Rides in Millions in 1907.	Rides per Head of Pop. in 1907.
Greater London.....	7.2	2,254	348
Greater New York.....	4.3	1,740	406
Greater Paris.....	3.0	1,040	368
Greater Berlin.....	3.2	976	304
Chicago.....	2.1	820	383
Philadelphia.....	1.5	603	412
Greater Boston.....	1.3	651	500

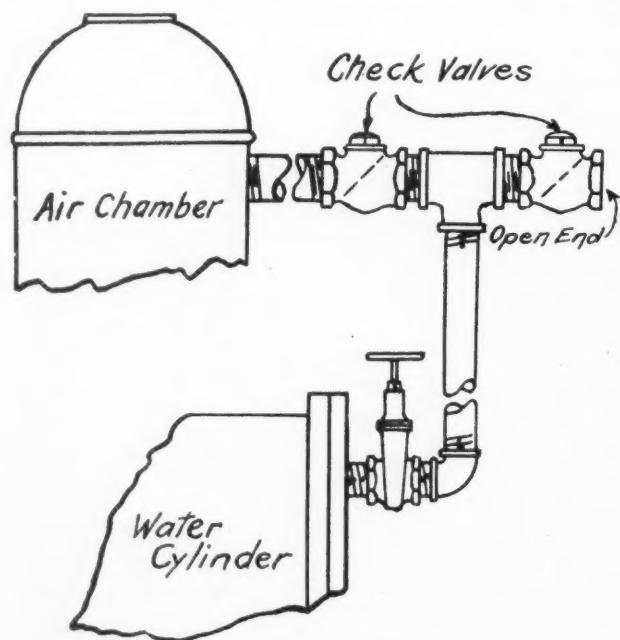
VIBRATION IN HOUSE SERVICES

Attributed to Lack of Air in Air Chamber of Pump—
Also to Loose Ball Cocks—Method of Preventing
Former by Automatic Appliance

THIS subject was discussed at a meeting of the New England Water Works Association, and the information contributed and published in the September *Journal* of the Association is given in abstract below.

A letter from Houlton, Maine, stated that the supply there was pumped by a triple-geared pump with rawhide pinions having a capacity of 1,000 gallons per minute. Although the valves were kept in good order, residences located on the two 10-inch pumping mains within 2,000 feet from the pumping stations were troubled by vibrations which sounded like the pump gears. This experience was found to have been more or less closely paralleled at a number of other places, and various methods had been adopted as remedies. One conclusion most commonly reached was that this vibration or hammering was caused by a lack of air in the air chamber, while others attributed it to air in the mains or in the water cylinders of the pump. One pump manufacturer stated that he had had considerable trouble with the transmission through the mains of the noise of the gears where the pump was direct connected to the motor, which they had overcome by belt connections.

An extreme case was cited as existing at Orona, Maine, where the pump is run by an electric motor. In this case there is a pounding on the lines so great that some of the consumers are kept awake at night by it and a number of copper boilers have been burst although tested to 200 pounds pressure, whereas the water pressure is under 100 pounds. At Greenfield, Mass., a gauge was placed on the air chamber to indicate when this was full of water, which sometimes occurred about an hour after it had been filled with air. In order to keep air in the air chamber the water end of the pump cylinder was connected with the air chamber by piping on which were placed a gate valve and two check valves, as shown on the accompanying sketch. When the pump is running, if the gate valve near the water cylinder of the pump be opened, as the pump makes a suction stroke it takes in air through the open-end check valve, and on the return stroke this check valve is closed and the air is forced through the other check valve into the air chamber of the pump. A little water finds its way into the vertical pipe of this connection and travels up and down with each stroke of the pump, acting as a plunger. The gate valve



ARRANGEMENT OF VALVES AND PIPE TO FEED AIR INTO AIR CHAMBER

opening is so regulated that a very small amount of air is taken in at each stroke; not enough to be drawn down into the water cylinder. At Hingham, Mass., likewise the air chamber was found to fill with water, and there the air was replaced by connecting the chamber by a pipe with the compressed air starting outfit which formed a part of the gas-engine plant.

It was apparently demonstrated that some rattling in house services cannot be in any way attributed to pumps, as at Springfield, Mass., where the supply is entirely by gravity, much the same trouble has been experienced. In this city it has been found almost invariably that some ball cock is loose and is dancing up and down and thus causing the chugging in the house; and at New Bedford vibration through more than 1,000 feet of mains was found to have been caused by a large ball cock on the supply to a railway storage tank.

CONVERSION TABLES

Weight Per Linear and Square Unit—Rates of Motion and of Work—Weight, Volume, Area and Length—English and Metric Units—Acreage Coordinates

We publish in this issue a set of tables prepared by the editor for his own use, most of them different from any which he has seen in print. Most of these deal with what may be called combination units, such as weight per lineal unit, rate of motion and of work, weight per unit of volume, etc. There are added, for convenience, tables which are not original, for conversion of metric units to English and the reverse, these dealing with volume, area and length; of English and metric heat units and of Fahrenheit and centigrade temperature. No explanation of the use of these tables seems to be necessary. In certain of them one or two figures at the end of a number are seen to be in italics. This is to indicate that such figure or figures are repetends—that is, the same figure or combination of figures is repeated indefinitely, and may be carried out to as many decimal places as is desired.

The use of the tables will, of course, depend upon the work in hand. Thus, in sewer designing the question may arise as to how many miles per day sewage will flow when its velocity is two feet per second. From the table we find that one foot per second is equivalent to 16.3636 miles per day; consequently, 2 feet per second is equivalent to double that. Or, should the pressure in a French description be stated as so many grams per sq. m.m., what would be the equivalent in pounds per square inch? We find one gram per square m.m. is equivalent to 1.422294 pounds per square inch.

The last table is entirely different from the others and needs some explanation. In many classes of calculations dealing with cities it is desirable to obtain close approximations to the areas of certain subdivisions, such as a block or a collection of blocks. This might occur in the designing of a water supply or sewerage system, when it is desired to learn the population on a certain area to be served, an assumption of density of population having been made. In perhaps the majority of cases the area will be a rectangle bounded by streets; or, if it is not, an equivalent rectangle can readily be obtained when two of the sides are at right angles, by sketching in two others which will enclose an approximately equivalent area. Measuring the two dimensions, find the nearest approximation to one of them in the ordinate column and follow along the horizontal line until the nearest approximation to the other is found; the figure at the head of this vertical column will give the number of acres in the area. Thus, if the dimensions are 325 and 675, finding 325 in the ordinate column and following along the horizontal line we find the figure 670 and at the head of this column the number 5. Consequently, the area contains a very little over five acres, the excess being less than one per cent. By interpolating, an approximation within three to five per cent of absolute correctness can be obtained without other than mental calculation.

CONVERSION TABLES, SIMPLE AND COMBINED UNITS

CUBIC MEASURE AND VOLUME, United States

	Cubic Inches (Cu. In.)	Cubic Feet (Cu. Ft.)	Cubic Yards (Cu. Yds.)	Cord of Wood	Perch of Masonry*	U. S. Bushels (Bu.)	U. S. Gallons (Gals.)	LIQUID Barrel (Bbl.)	MEASURE
1 Cu. In. =	1.	.0005787	.00002143	.0000045	.0000231	.000465	.004329	.000137	
1 Cu. Ft. =	1728.	1.	.037037	.007812	.04	.803564	.748052	.23748	
1 Cu. Yd. =	46656.	27.	1.	.21094	.1.08	21.69623	191.9767	6.41196	
1 Cord. =	221,184	128.	4.74074	1.	.512				
1 Perch. =	43,200	25.	.925925	.18084	1.				
1 Bu. =	2150.42	1.24445	.046091			1.			
1 Gal. =	231.	.1336805	.004951				1.	.031746	
1 Bbl. =	7276.5	4.21	.155959				31.5	1.	

* A Perch actually contains 24.75 cu. ft., but varies according to local custom. But little used by engineers.

WEIGHT PER LINEAR UNIT, English and Metric

	Ounces per Inch	Pounds per Inch	Pounds per Foot	Pounds per Yard	Grammes per Cm.	Grammes per Metre	Kilogrammes per Metre
1 Oz. per In. =	1.	.0625	.75	2.25	11.161445	1,116.144	1.116144
1 Lb. per In. =	16.	1.	12.	36.	178.58312	17,858.312	17,858.312
1 Lb. per Ft. =	1.33	.083	1.	3.	14.88193	1,488.193	1,488.193
1 Lb. per Yd. =	.444	.027	.33	1.	4.96064	496.0642	496.064
1 G. per Cm. =	.089595	.0055997	.067196	.201587	1.	100.	1.
1 G. per M. =	.0008959	.000056	.000672	.0020159	.01	1.	.001
1 Kg. per M. =	.895946	.055997	.671956	2.015868	10.	1000.	1.

WEIGHT OR PRESSURE AND AREA, English and Metric

	Ounces per Sq. Inch	Pounds per Sq. Inch	Pounds per Sq. Foot	Grammes per Sq. Mm.	Grammes per Sq. M.	Kilogrammes per Sq. M.	Kilogrammes per Sq. Cm.
1 Oz. per Sq. In. =	1.	.0625	.9	.043943	43,943.067	43.94307	.0043943
1 Lb. per Sq. In. =	16.	1.	144.	.7030891	703,089.07	703,08907	.0703089
1 Lb. per Sq. Ft. =	.111	.00694	1.	.0048826	4,882,563	4,882,563	.0048833
1 G. per Sq. Mm. =	22,75671	1.422294	204,8104	1.	1,000,000.	1000.	1.
1 G. per Sq. M. =	.0000228		.0002048	.0000001	1.	.001	.0000001
1 Kg. per Sq. M. =	.0227567	.0014223	.2048104	.001	1000.	1.	.0001
1 Kg. per Sq. Cm. =	227.5671	14.22294	2048.104	10.	10,000,000.	10,000.	1.

RATE OF MOTION, English

	Inches per Second	Feet per Second	Feet per Minute	Feet per Hour	Feet per Day	Miles per Minute	Miles per Hour	Miles per Day
1 In. per Sec. =	1.	.0833	.5.	300.	7,200.	.0009469	.05681	1.3636
1 Ft. per Sec. =	12.	1.	60.	3600.	86,400.	.01136	.6878	16.3636
1 Ft. per Min. =	.2	.0166	1.	60.	1,440.	.0001893	.01136	.2727
1 Ft. per Hr. =	.0033	.000277	.0166	1.	24.		.0001893	.0046
1 Ft. per Day. =	.000138	.0000116	.000694	.04166	1.			.0001893
1 Mi. per Min. =	1056.	88.	5280.	316,800.	7,603,200.	1.	60.	1440.
1 Mi. per Hr. =	17.6	1.4666	.88.	5,280.	126,720.	.0166	1.	.24.
1 Mi. per Day. =	.7333	.06111	.3.666	.220.	5280.	.000694	.04166	1.
g* =	385.92	32.16	1929.6	115,776.	2,778,624.	.3655	21.93	526.3

* Acceleration due to gravity.

RATE OF MOTION, Metric

	Millimetres per Second	Metres per Second	Metres per Minute	Metres per Hour	Metres per Day	Kilometres per Minute	Kilometres per Hour	Kilometres per Day
1 Mm. per Sec. =	1.	.001	.06	3.6	86.4	.00006	.0036	.0864
1 M. per Sec. =	1000.	1.	60.	3600.	86,400.	.06	3.6	86.4
1 M. per Min. =	16.66	.0166	1.	60.	1440.	.001	.06	1.44
1 M. per Hr. =	.277	.00027	.0166	1.	24.	.000016	.001	.024
1 M. per Day. =	.0115740		.000694	.0416	1.		.0000416	.001
1 Km. per Min. =	16,666.6	16.66	1000.	60,000.	1,440,000.	1.	60.	1440.
1 Km. per Hr. =	277.77	.2777	16.66	1000.	24,000.	.0166	1.	.24.
1 Km. per Day. =	11,5740	.0115740	.6944	.41.66	1000.	.000694	.0416	1.
g* =	9809.4	9.8094	588.564	35,313.84	847,532.16	.58856	35.314	847.532

* Acceleration due to gravity.

RATE OF MOTION, English and Metric

	Feet per Second	Feet per Minute	Miles per Hour	Miles per Day	Millimeters per Second	Meters per Second	Meters per Minute	Kilometers per Hour	Kilometers per Day
1 Ft. per Sec. =	1.	60.	.681818	16.3636	304.797	.304797	18.28782	1.097269	26.33446
1 Ft. per Min. =	.01666	1.	.0115636	.272727	5,07995	.005080	.304797	.018288	.438908
1 Mi. per Hr. =	1.4666	88.	1.	24.	447.0356	.447036	26.82216	1.609328	38.62387
1 Mi. per Day. =	.061111	3.666	.04166	1.	18.62648	.018626	1.117590	.067055	1.609328
1 Mm. per Sec. =	.003281	.196854	.002237	.053687	1.	.001	.06	.0036	.0864
1 M. per Sec. =	3.280869	196.8521	2.236956	53.68694	1000.	1.	60.	3.6	86.4
1 M. per Min. =	.054681	3.280869	.0372826	.894783	16.66	.01666	1.	.06	1.44
1 Km. per Hour. =	.911352	54.68115	.621377	14.91305	277.77	.2777	16.66	1.	.24.
1 Km. per Day. =	.037980	2.278798	.025891	.621377	11.57407	.0115740	.69444	.04166	1.

RATE OF WORK, English, Metric and Electrical

	Foot-pounds per Second	Foot-pounds per Minute	Foot-pounds per Hour	Foot-pounds per Day	Foot-pounds per Year	Watts (Electrical)	Kilowatts (Electrical)	Horse- power	Cheval Vapeur (Metric)
1 Ft.-Lb. per Sec. =	1.	60.	3600.	86,400.	31,536,000.	1.3563	.001356	.001818	.001793
1 Ft.-Lb. per Min. =	.01666	1.	60.	1440.	525,600.	.022605	.0000226	.0000303	.0000299
1 Ft.-Lb. per Hr. =	.000694	.01666	1.	24.	8,760.	.0003767			
1 Watt. =	.7373	44.238	2654.28	63,702.72	23,251,493.	1.	.001	.00134	.001322
1 Kilowatt. =	737.3	44,238.	2,654,280.	63,702,720.		1000.	1.	.34	1.3221
1 Horsepower. =	550.	33,000.	1,980,000.	47,520,000.		745.965	.74596	1.	.98632
1 Cheval Vapeur. =	557.639	33,458.37	2,007,502.20	48,180,053.		756.30	.75630	1.01387	1.

WEIGHT AND VOLUME, U. S. and Metric

	Pounds per Cu. In.	Pounds per Cu. Ft.	Pounds per Cu. Yd.	Tons per Cu. Yd.	Pounds per Gallon	Grammes per Cu. Cm.	Kilogrammes per Cu. M.	Grammes per Litre	Grammes per Hektolitre
1 Lb. per Cu. In. =	1.	1728.	46,656	23.328	231.	27,68092	27,680.92	27,680.92	27,680,920.
1 Lb. per Cu. Ft. =	.0005787	1.	27.	.0135	.1336805	.016019	.16,019051	.16,019.051	.16,019,051
1 Lb. per Cu. Yd. =	.0002143	.037037	1.	.0005	.004951	.0005933	.5932982	.5932982	.593,2982
1 Ton per Cu. Yd. =	.042867	.74,0740	2000.	1.	.9,90226	1. 186596	1186.5964	1186.5964	1,186,596.4
1 Lb. per Gal. =	.004229	7.48052	201.974	.100987	1.	.1198308	119.83081	119.83081	119,830.81
1 G. per Cu. Cm. =	.036126	62.4257	1685.494	.842747	8.345101	1.	1000.	1000.	1,000,000.
1 Kg. per Cu. M. =	.0000361	.062426	1.685494	.0008427	.008345	.001	1.	1.	1000.
1 G. per Litre. =	.0000361	.062426	1.685494	.0008427	.008345	.001	1.	1.	1000.
1 G. per Hl. =	.0000624	.0016855	.....	.00000834	.000001	.001	.001	.001	1.

WORK, U. S., Metric and Electric

	Inch-pounds	Foot-pounds	Foot-tons	Mile-pounds	(Metric)		(Electrical)	
					Grammetres	Kilogram-metres	Joules	Watt-hours
1 In.-Lb. =	1.	.0833	.0000416	.0000158	11. 521262	.0115212	.113025	.000314
1 Ft.-Lb. =	12.	1.	.0005	.0001893	138. 2551	.1382551	1.356300	.0003767
1 Ft.-T. =	24,000.	2,000.	1.	.37878	276. 51029	.2712. 6	.733504	
1 Mi.-Lb. =	63,360.	5280.	2.64	1.	729. 9872	.729. 9872	7161. 174	.1.98925
1 G. M. =	.086796	.007233	.....	.....	1.	.001	.0098101	
1 Kg. M. =	86. 79605	7.23300	.0036165	.0013699	1000.	1.	.9.81012	.0027250
1 Joule. =	8.8476	.7373	.0003686	.0001396	101. 93549	.1019355	1.	.000277
1 Watt-hr. =	31,851.36	2654.28	1.32714	.502705	366. 968. 2	366. 968	3600.	1.

LENGTH, Metric and English

	Millimetres (Mm.)	Centimetres (Cm.)	Decimetres (Dm.)	Metres (M.)	Kilometres (Km.)	Inches (In.)	Feet (Ft.)	Miles (Mi.)
1 Mm. =	1.	.1	.01	.001	.000001	.039370	.003281	.....
1 Cm. =	10.	1.	.1	.01	.00001	.3937043	.032809	.....
1 Dm. =	100.	10.	1.	.1	.0001	3. 937043	.328087	.000062
1 M. =	1000.	100.	10.	1.	.001	39. 37043	3. 280869	.0006214
1 Km. =	1,000,000.	100,000.	10,000.	1000.	1.	39,370. 43	3280. 869	.621377
1 In. =	25. 3998	2.53998	.253998	.025400	.0000254	1.	.08338	.....
1 Ft. =	304. 797	30. 4797	3. 04797	.304797	.0003048	12.	1.	.....
1 Mi. =	1,609,328.16	160,932.82	16,093.282	1609.3282	1.609328	63,360.	5280.	1.

AREA, Metric and English

	Square Millimetres (Sq. Mm.)	Square Metres, or Centiares	Square Decametres, or Ares	Square Hectares	Square Kilometres (Sq. Km.)	Square Inch	Square Foot	Square Yard	Acre	Square Mile
1 Sq. Mm. =	1.	.000001	.....	.....	.001550	.000011	.....	.....	.....	.....
1 Centiare. =	1,000,000.	1.	.01	.0001	1550. 03	10. 7641	1. 196	.00247	.....	.....
1 Are. =	100.	1.	.01	.0001	155.003	1076. 41	119. 601	.024711	.000386	
1 Hectare. =	10,000.	100.	1.	.01	.....	107,641.0	11,960.1	2. 47110	.03861	
1 Sq. Km. =	1,000,000,000.	10,000,000.	1000.	100.	1.	39,370. 43	3280. 869	247. 110	.386109	
1 Sq. In. =	645. 2	.000645	.....	.....	1.	.006944	.000771	.....	.....	.....
1 Sq. Ft. =	92,901.	.0929	.000929	.....	144.	1.	.111111	.....	.....	.....
1 Sq. Yd. =	836,111.	.8361	.008361	.000836	1296.	9.	1.	.0002066	.....	.....
1 Acre. =	4046. 77	40. 4677	.404677	.040407	43,560.	4840.	1.	.00001	.0015625	
1 Sq. Mi. =	2,589,933.	25,899.3	258,993.	258,993	2.589933	3,097,600.	640.	1.	.....	.....

VOLUME, U. S. and Metric

	Cubic Inch	Cubic Foot	Cubic Yard	Bushel (Struck)	Gallon (Liquid)	Millilitre, or Cu. Cm.	Litre, or Cu. Dm.	Stere, or Cu. M.
1 Cu. In. =	1.	.0005787	.00002143	.000465	.004329	16. 38663	.0163866	.0000164
1 Cu. Ft. =	1728.	1.	.037037	.803564	.7,48052	28,316. 1	.283163	.28316
1 Cu. Yd. =	46,656.	27.	1.	21. 69623	201. 97404	764. 534. 7	.764. 5347	.764534
1 Bu. =	2150. 42	1. 244456	.046091	1.	9. 309177	35. 23774	35. 23774	.0352377
1 Gal. =	231.	.133681	.004951	.1074209	1.	3785. 3115	3. 785311	.0037853
1 Cu. Cm. =	.0610254	.0000353	.0000013	.0000284	.0002642	1.	.001	.000001
1 L. =	.61. 0254	.035315	.001308	.0283783	.264179	1000.	1.	.001
1 St. =	61,025. 4	35. 3156	1. 307985	28. 3783	264. 179	1,000,000.	1000.	1.

HEAT UNITS, English and Metric

	British Thermal Units (B.T.U.)	Foot Pounds (Ft. Lbs.)	Calories'	Kilogrammetres (Kg. M.)	Fahrenheit....	0°	32°	40°	50°	60°	70°	80°	90°
					Centigrade....	-17. 8°	0°	4. 4°	10. 0°	15. 6°	21. 1°	26. 7°	32. 2°
1 B. T. U. =	1.	778.	.252016	107. 59									
1 Ft. Lb. =	.001285	1.	.000324	.138255									
1 Calorie. =	3. 968	3087. 937	1.	426. 9									
1 Kg. M. =	.0092949	7. 233	.002342	1.									

ACREAGE COORDINATES

NUMBER OF ACRES IN AREA

Ordinate	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
100	436	871	1307	1742	2178	2614	3049	3485	3920	4356	4792	5227	5663	6098	6534
110	396	792	1188	1584	1980	2376	2772	3168	3564	3960	4356	4752	5149	5544	5940
120	363	726	1089	1452	1815	2178	2541	2904	3267	3630	3993	4356	4719	5082	5445
130	335	670	1005	1340	1676	2011	2346	2681	3016	3351	3686	4041	4356	4692	5026
140	311	622	933	1245	1556	1867	2178	2489	2800	3111	3422	3733	4044	4356	4667
150	290	581	871	1162	1452	1742	2033	2323	2614	2904	3194	3485	3775	4066	4356
160	272	544	817	1089	1361	1633	1906	2178	2450	2722	2994	3266	3538	3812	4084
170	256	512	769	1025	1281	1537	1793	2050	2306	2562	2818	3074	3330	3586	3844
180	242	484	726	968	1210	1452	1694	1936	2178	2420	2662	2904	3146	3388	3630
190	229	459	688	917	1146	1376	1605	1834	2064	2293	2512	2752	2981	3210	3439
200	218	436	653	871	1089	1307	1525	1742	1960	2178	2396	2614	2832	3050	3267
225	194	387	581	774	968	1162	1355	1549	1742	1936	2130	2323	2517	2710	2904
250															

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OCTOBER 5, 1910

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Ornamental Standpipes

Many efforts have been made to design steel or iron standpipes which shall be ornamental, but we have known of none which were not glaring failures. A nearer approach to symmetry and graceful outline seems to be possible with tanks elevated upon towers, but none of these can be said to be really ornamental. Where surroundings demand that nothing be erected which is a blot upon the landscape, it seems necessary to enclose the standpipe, if one must be built, with masonry; or possibly make the standpipe itself of masonry when this is practicable. A masonry-enclosed standpipe which has been very carefully designed is described in this issue, and we hope to describe others in the near future.

Sewage Disposal by Dilution

DURING the past five months the MUNICIPAL JOURNAL AND ENGINEER has published several articles of greater or less length which had for their theme the disposal of sewage in either fresh or salt water by dilution, and, connected therewith, the amount and kind of purification effected by sedimentation and screening. It was not without a purpose that these several articles were given to our readers, since there was in process of formation during that time a most important opinion on this matter, which may be of far-reaching effect. During those five months several sanitary engineers of the highest standing have been presenting their opinions upon the subject to the New York State Board of Health, with a view to assisting that Board in reaching a conclusion on the permissibility of disposing of sewage in this way. The particular incident which has given rise to this symposium of opinions was the request of the city of Rochester, N. Y., to be permitted to discharge its sewage into Lake Ontario after a preliminary treatment of rapid sedimentation and screening. The engineers who have reported officially upon the matter at the request of the city were Messrs. Emil Kuichling, who prepared the original plans, Mr. E. A. Fisher, City Engineer of Rochester, and Messrs. Rudolph Hering of New York and Geo. H. Benzenberg of Milwaukee, consulting sanitary engineers of the highest standing; and Mr. Allen Hazen, consulting engineer, X. H. Goodnough, chief engineer of the Massachusetts State Board of Health, F. Herbert Snow, chief engineer of the Pennsylvania State Board of Health and Theo. Horton, chief engineer of the New York State Department of Health, reported on the matter at the request of Dr. Porter, State Health Commissioner. All of these engineers are members of the American Society of Civil Engineers. The unanimous agreement of all of these upon any question relative to sewage disposal certainly carries with it the greatest weight; and any disagreement with their conclusions must be supported by the most conclusive arguments to receive serious consideration.

It was perhaps hardly to have been expected that all would agree on all questions raised by the plans proposed by Rochester; and it is therefore all the more gratifying to find that there is absolutely no disagreement on any fundamental principle and very little on any of the minor details of the plan. The conclusion thus unanimously reached has a most important bearing on the matter of sewage disposal in this country.

On March 1, 1910, the city of Rochester submitted to the New York State Board of Health plans for works intended to relieve the Genesee River of the pollution now received from the sewers of Rochester which discharge along its banks. The plan proposed was to construct a series of intercepting sewers which should receive the house sewage and the run off from rainstorms until this reached a volume three to five times the dry weather flow, the surplus of combined sewage above this being discharged into the river through the present outlets by overflows. The intercepted sewage would be carried to a point about three miles north of the city, where it would enter six detritus tanks each 57 feet long, 16 feet wide at the top and for 4 feet below the flow line and 6 feet wide at the bottom; the depth of flow in the tanks ranging from 11 feet near the outlet end to 14 feet over the sludge outlet. This sludge outlet is designed to be 12 feet from the inlet end of the tank and on the center line of the same, all the bottom of the tank sloping toward this outlet, which is controlled by a valve. About 5 feet from the entrance end of the tank a screen formed of flat iron bars extends across the tank. This screen is set at an angle of 70 degrees from the vertical and the lower edge rests on a concrete bench extending from the end of the tank 10 feet below its top, or 8 feet below the flow line.

The effluent from this sedimentation or detritus tank passes through a chamber 6 feet wide and 4 feet deep below the flow line. In the outlet channel of each tank is placed a revolving screen with its axle 6 feet from the detritus tank. Each screen consists of a pair of circular end frames 12 feet 8 inches in diameter, between which and radiating from the axle are five blades of wire cloth having approximately 1/12-inch

meshes; this screen extending entirely across the channel. The screen is to rotate so that its blades revolve against the flow of the sewage, and appliances are to be provided for artificially removing the materials caught and retained on these screens.

The capacity of each tank is about 61,000 gallons. The estimated population in 1935 is 325,000 people. On the basis of 100 gallons of sewage per capita daily the time of detention in the tanks would be 16 minutes. During storms, when the flow might be at the rate of 100 million gallons per day—the maximum capacity of the main outlet—the period of retention would be about five minutes and the average velocity of flow through the tanks would be about 1/6 foot per second.

After being relieved of a large part of the suspended matter by these sedimentation tanks and screens the effluent would pass through an outfall sewer consisting of a steel pipe 5 feet in diameter and about 9,400 feet long, 7,000 feet of which would be in the bed of the lake. This would bring the sewer into a depth of water of about 50 feet. At the end of the pipe would be a crib 50 x 30 feet in plan and 20 feet deep, designed to protect the end of the pipe from injury by ships, anchors, etc. At the crib the outfall sewer would terminate in a reversed curve which would bring the invert of the outlet opening five feet above the lake bottom. Through this the effluent from the sedimentation tank would be discharged directly into the lake.

These plans were approved by Messrs. Fisher, Hering and Benzenberg, before being submitted to the State Board. The State Commissioner of Health, Dr. E. H. Porter, submitted these plans, as is customary, to the chief engineer of the department, Mr. Theo. Horton; and also in addition requested opinions upon them from Messrs. Hazen, Goodnough, and Snow, as before stated. Mr. Hazen approved the plan, and had no changes to recommend in the same. Mr. Goodnough suggested that:

"While it is extremely unlikely that the discharge of sewage at the point proposed will have in any way a seriously objectionable effect upon the waters of the lake or upon the use of its shores as a summer resort for bathing, etc., it may be found desirable at some other time to extend the proposed outlet to a point further from the shore or to divide the flow of sewage and discharge it at two or more outlets instead of at one outlet as proposed; or it may be found desirable to provide two or more outlets and, while discharging all of the sewage at one point, change from time to time the point at which the sewage is discharged."

He, therefore, recommended that provision be made in the plans for so extending the outlet. Mr. Snow approved of the plan in general, but considered that "It well be well to consider the advisability of increasing, at the outset, the size of the sedimentation tanks."

In consideration of these reports, as well as his own conclusions on the subject, Mr. Horton reported to Dr. Porter in favor of the general plan, but suggested that the city be required to modify it so as to provide:

- (A) Settling tanks of twice the capacity shown by the plans.
- (B) Skimming boards or other means for removing objectionable grease and oils.
- (C) Branch connections near the end of the outfall sewer in the lake to permit the flow to be divided and discharged at two or more outlets in the lake whenever such provision may become necessary.
- (D) Suitable means at the end of the outfall sewer which will permit of its being extended further out into the lake, if, or whenever, such provision may become necessary.

Following these several reports Commissioner Porter on July 26 returned the plans to the city of Rochester in order that the same might be modified as suggested in Mr. Horton's report just quoted. On Aug. 20 the city resubmitted the plans, modified in practical accordance with the requests of the State Board, and on September 21 these were returned to the city with the full approval of the Commissioner of Health.

In making the changes in the plans, the provision for doubling the capacity of the settling tanks was met not by increasing their size but by adding six additional supplementary tanks having a total capacity of twice that of the settling or detritus tanks shown on the original plans. This, however, Chief Engineer Horton considered to be an improvement over

the original plans, since it gave an opportunity for a separation of the solids which would be retained in the tanks and would undoubtedly simplify the handling and disposition of sludge. He recommended that, in granting the permit, the Department should retain the right to see that the operating of the works conform at all times to the requirements of the State Commissioner of Health; that the multiple outlets suggested should be extended whenever the State commission should consider it necessary; that no sludge should be discharged into Lake Ontario; and that, whenever required by the Department, the sewage be subjected to a more complete purification.

It is seen that, as stated above, the general principle of discharging into Lake Ontario sewage which has been subjected to sedimentation and screening only is fully sustained by the State Board of Health and by the seven eminent engineers who were called upon to consider this plan as well as by the eighth, who designed it.

The reports of the engineers consulted by the State Commissioner of Health contained in each case the reasons upon which the conclusion was based; two of which have already been quoted. These were given more at length in Mr. Hazen's report, and it may be well to quote from this certain of the more significant paragraphs. Incidentally Mr. Hazen stated that it is proposed to treat the sewage of Toronto, Ont., in the same way that is proposed for Rochester. He stated that "No pollution affecting in any way the senses along the lake shore as a result of the discharge of the effluent is to be reasonably anticipated, even under adverse conditions of wind and wave action. I should say that ordinarily no chemical or biological traces of sewage could be detected at the lake shore, but there may be times when refined methods of research would show such traces. In that event they certainly would be traces rather than substantial quantities of material of practical significance." In general he considers that the conditions along the lake front and also at the nearest water works intakes, one of which is three miles west of the proposed outlet and the other fifty miles away, would certainly not be any worse and would probably be somewhat better than under the present conditions which are produced by the discharge of the sewage into the Genesee river, by which it is carried to the lake about five miles distant.

Concerning the proposition that the city should purify the sewage by disinfection or filtration for the protection of the public supply drawn from the lake by the Rochester and Lake Ontario Water Company he argued as follows:

This water I understand is filtered before use. To disinfect the Rochester sewage with this end in view would mean (1) treating a quantity of sewage probably ten times as great as the volume of water and (2) treating sewage which is a difficult and expensive substance to disinfect, instead of treating the lake water taken at the filter plant, which is an ideally easy and cheap substance to disinfect. It would certainly cost ten times as much to disinfect a volume of sewage as a similar volume of water at the intake, and with the greater volume of sewage it would cost at least one hundred times as much to disinfect the Rochester sewage as it would to disinfect the water taken at the intake. The former would only protect the water from that part of the possible pollution which came from the dry-weather flow of the Rochester sewage, which is probably not the most dangerous part of the flow. The latter would tend to protect the water from pollutions of all kinds from whatever sources.

From every standpoint it is enormously cheaper and also more effective to treat the water than it is to try to protect the water by treating the sewage.

To treat the sewage by oxidation or nitrification through biological filtration on the shore of the lake before discharging it would be to attempt to effect by artificial processes, at great expense, results that will be accomplished in the lake without cost by the organisms that are in the lake water and that are introduced with the sewage, with the aid of the supply of dissolved oxygen in the lake water present in amounts enormously greater than required for this purpose. To spend money to do in a crude and inefficient way on shore with resulting inconveniences and nuisances to property owners in the neighborhood that which otherwise will be freely done in the lake without expense and without nuisance is certainly a great and inexcusable waste of natural resources.

BONUS FOR CORRECT FIRING

Based on Amount of Carbon Dioxide—Encouraging Water Works Firemen in Careful Use of Coal at Wabash— Simple Method of Sampling Flue Gas

THE giving of bonuses to the firemen in the boiler room of a water works plant, as practised at Wabash, Ind., was described by Mr. F. W. McNamee in a discussion before the Central States Water Works Association at its September convention as follows:

I think you gentlemen will all agree with me that the one class of labor about a plant that comes next perhaps in importance to the chief engineer is the fireman, and he is usually the man who cares least for the results he produces. He is the man that is shoveling dollars. He is the man that must work 24 hours a day when you are not able to watch him. So we began to study the question of combustion that we were getting from our coal, and we found that the results were very, very bad. The boiler plant we have isn't strictly up to date. We have a mixed lot of boilers, but we had an automatic stack damper regulator that we thought was doing the business for us. But we began to analyze the flue gas, and found at our first analysis that the per cent of carbon dioxide (which indicates directly the efficiency of a furnace at the time your sample is drawn) was running from four to five and sometimes six per cent, indicating very bad combustion at that time. In addition to this stack damper regulator at that time we were regulating our fires by the ash pit doors. We began to regulate thereafter by the damper in each boiler connection to the stack—the breeching—and we found that helped very materially.

After working at the problem for some time after that we have worked out a scheme of paying our firemen on a bonus basis. We pay them a flat rate per hour, plus a bonus, depending on the per cent of carbon dioxide there is in the flue gas. Then the question came up as to how to get an average sample of the gas to base this bonus on. We contrived a scheme that is working out very nicely. We supplied each boiler with a 5-gallon glass bottle. We connected the top of that bottle through an 8-inch brass pipe to the breeching just under the stack damper. This bottle has in the bottom of it a brass valve, having in it a calibrated plug, so that, if filled with water, it will just empty itself in 12 hours, the water dripping out. We fill this with water at the beginning of a run, and on top of the water we place a small amount of coal oil, because the carbon dioxide is soluble in water. Each fireman when he goes on duty puts on as many bottles as there are furnaces for him to run, and starts them to dripping, and by that scheme we take a drop of gas for every drop of water that leaves the bottle, and at the end of the run you have an average sample of the gas produced under the fireman's charge. Our practice is, when the fireman finishes his run he takes off the bottles, labels them, putting on his name and the date; and the next day the chief engineer analyzes the gas in that bottle, and we give the fireman credit for the per cent of carbon dioxide in that gas.

Our bonuses run from fifteen cents a day to seventy cents. If

Scale of Bonuses for Correct Firing		
6	per cent.....	15 cents
6½	" "	20 "
7	" "	25 "
7½	" "	30 "
8	" "	35 "
8½	" "	40 "
9	" "	45 "
10	" "	50 "
11	" "	55 "
12	" "	60 "
13	" "	65 "
14	" "	70 "

the fireman shows an average per cent of five or less, we take him off the job, because he would be an expensive man if he worked for nothing. If the analysis shows a 6 per cent CO₂ we pay him 15 cents a day extra, and so on up to 70 cents. Our scale is as shown in the accompanying table.

It is not practical to try to go beyond 14 per cent, because you lose in other directions more than you gain by the increase of the CO₂.

With this kind of an incentive to "sit up and take notice" the fireman will pay a great deal better attention to his business, and, instead of firing in a few scoops of coal into the middle of the grates and sitting around reading a newspaper while the cold air rushes in on the sides of the fire which is in a great pile, he will fire often, and fire thin, keeping his grates thoroughly covered.

Our consumption of coal is from 12 to 16 tons a day, and our saving, after paying the bonus to the firemen, has averaged up from six to eight dollars a day; so you can see that the little time and money spent on an outfit of this kind are well spent. It is the most profitable investment we have made in the last year—this little outfit to take these samples of gas and to make the analysis.

LICENSING AND REGULATING DOGS

Power of Towns and Cities to Enact Ordinances—Running at Large Defined—Registering Dogs—Dog Tax Really a License—By Whom Paid—Vicious Dogs

By JOHN SIMPSON

It is well settled that the legislature may give to towns and cities authority to make by-laws as to the licensing, regulating and restraining of dogs going at large, and to affix penalties for the violation of such by-laws. Thus, the by-law of a city providing generally that the owners of dogs shall not suffer them to go at large in the city or to escape from their master's premises without being safely muzzled has been held valid and enforceable against all persons who are inhabitants of the city. Commonwealth v. Chase 6 Cush. (Mass.) 248; Commonwealth v. Dow, 10 Metc. (Mass.) 382. This has raised the question, when is a dog at large and when is he not? And the question has been answered by decisions in various States.

A dog is not at large if he is by the side of his owner or the person in charge of him or so near that he may be controlled though he is not tied. But he is at large if he is following, through the streets, the person in charge of him, loose, and at such a distance that such control cannot be exercised as will prevent his doing mischief. Commonwealth v. Dow, 10 Metc. (Mass.) 382.

A dog at play upon his owner's land is not "at large." McAnaney v. Jewett, 92 Mass., 151. But of course a dog is running at large when he leaves his owner's premises or goes on the public road, no one having control of him being near. Nehr v. State, 35 Neb., 638. A foxhound in pursuit of game at the command of his master, who is following at some distance, is not running at large. Wright v. Clark, 50 Vt., 130.

Various statutes provide for the killing of dogs running at large without being licensed. And ordinances providing for the killing of unmuzzled dogs running at large have been held to be reasonable police regulation. Haller v. Sheridan, 27 Ind., 494; Commonwealth v. Chase, 60 Mass., 248.

But many decisions show that the legislature has also power to give municipalities authority to impose a tax upon the keeping of all dogs regardless of the question of whether they are ever permitted to go at large.

So, a city of the third class may, within its limits, require the owner, keeper or harborer of any dog to register its name and description and pay a reasonable tax or license, although the dog may never have been permitted to run at large. City of Iola v. Sugg. Kan., 56 Pac., 541.

And the statutes frequently provide in direct terms for the

licensing of all dogs, and impose penalties for the failure to do so.

By section 2864 i of 4 Burns' Supp. Rev. St. Indiana, 1897, it is made a misdemeanor for any person to fail to hold either the receipt of the township assessor or the receipt of the township trustee showing that the dog tax has been paid and section 2864 d makes it a misdemeanor for any one keeping a dog not to pay the assessor the tax and receive his receipt. Section 2864 b requires the assessor to give a receipt for the tax paid him, which shall contain the name of the owner and a description of the dog. The statute has been held to be a reasonable one. *State v. Thompson, Indiana, 58 N. E., 728.*

The Massachusetts statute, Pub. St., c. 102, sec. 81, requires a person, on becoming the keeper of a dog, to have it licensed. It has been held, construing this statute, that nine days is an unreasonable time to keep a dog without having it licensed. *Commonwealth v. Wermouth, Mass., 54 N. E., 352.*

Where a statute provides for the securing of a license before a certain day under a penalty, procuring a license after that day will not relieve an owner of liability for the penalty. Town clerks have no discretion in the matter of issuing such licenses. And officers charged with the duty of prosecuting under the statute may be thereby declared liable to punishment by fine for the neglect of their duties in failing to prosecute. *State v. Colby, N. H., 36 Atl., 252.*

The Vermont statute, sec. 4826, provides that every dog more than eight weeks old, except a vicious one, shall be licensed, and that any one violating this provision shall be fined; and authorizes the killing of unlicensed dogs wherever found. A person prosecuted for keeping dogs without a license proved that they were vicious and claimed this as a defense on the ground that they could not be licensed. He was convicted, the court holding that a vicious dog could not be kept at all. *State v. Smith, Vermont, 47 Atl., 390.* This statute is constitutional, *id.*

Section 4821 allows a person who after May 15 becomes the owner or keeper of a lawfully unlicensed dog to have it licensed within 10 days. *State v. Brown, Vermont, 48 Atl., 652.*

Such statutes being penal are to be strictly construed.

A Massachusetts statute, 1867, c. 130, requires the owner or keeper of a dog to have it licensed but imposes a penalty only on the keeper of an unlicensed dog. It was held that the owner of a dog who was not also its keeper was not liable in a penalty under this statute, *Commonwealth v. Canada, 107 Mass., 405; Jones v. Commonwealth, 81 Mass. 193.*

A dog tax is usually collectible in the town where the dog is kept, not necessarily at the place of residence of the owner. *Arnold v. Ford, 65 N. Y. S., 528.*

An early Massachusetts statute requiring a dog to be licensed in the town where the owner resided was repealed by a later one requiring it to be licensed in the town where it is kept, but the later act imposed no penalty. It was held that the penalty imposed by the first act could not be made to apply to the second. *93 Mass. 480.*

Under a statute, New York Laws, 1892, c. 686, providing that the owner of every dog shall be liable to a tax, and that, whenever required by any assessor, he shall furnish a written description of every dog owned by him, under penalty of forfeiting \$5, the penalty is \$5 for each refusal, not for each dog owned, and a judgment for \$80 against an owner of 16 dogs for one refusal to furnish such description was held erroneous. *Arnold v. Ford, 65 N. Y. S., 528.*

A dog tax to be devoted to the payment of damage done by dogs to sheep is not strictly a tax in the sense of being a burden, charge or imposition for public uses. It is an exercise of the police power of the State. Dogs are properly subjected to special and peculiar regulations for the purpose of repressing the mischief likely to be done by them to more valuable property and to persons. *People v. Van Horn, Mich. 9 N. W., 246.*

Such a tax is not assessed by value, but specifically, and is a valid charge, rather to be regarded as a license than a tax law. *Kalthoff v. Hendrie, Mich., 12 N. W., 191.*

COST OF TELEPHONE SERVICE

Discussion of System of Rates Recommended for Boston and Its Suburbs—Telephone Company Under-Capitalized—Zone System

ANYTHING that means the throwing open to the general public of first-class telephone service at rates which the general public can afford to pay is of more or less immediate interest to telephone users, and to non-subscribers who would like to be users, all over the country. From this point of view the scheme of rates and the basis of rate regulation adopted by the Massachusetts Highway Commission, and made public on Aug. 24 as its official recommendation for the Boston and suburban telephone district, is of much more than local importance. The investigation by the Massachusetts Commission has occupied three years and a half, and the result has been to demonstrate that in the Boston district, and presumably in many other cities and towns, the small user of the telephone has been overcharged for the service he receives in order to balance on the company's books the waste caused by excessive use on the part of subscribers under various flat rates for unlimited calls.

The question of rates in the Boston district was brought up by various complaints filed with the Commission nearly four years ago. In order to eliminate innumerable questions of fact which were in dispute, it was agreed by all parties that it was desirable to have the books of the telephone company examined by an impartial, disinterested and reliable accountant. Following this examination of the books it became clear that an inventory and appraisal of the telephone company's entire property must be made before there could be any adequate basis for the adjustment of rates. This appraisal, which was most minute, showed that the replacement value of the company's property was nearly 20 per cent in excess of the par value of all the certificates of indebtedness outstanding. This result disposed of the charges that the company was over-capitalized. After referring to this and other of the earlier steps in its investigation, the Commission in its finding says:

The preliminary studies indicated that a reduction of from \$300,000 to \$400,000 could be made in the net yearly income of your company from the metropolitan and suburban districts with entire fairness to your company, and without impairing the efficiency of the service. This would amount to a horizontal reduction of only a small percentage per telephone if applied upon each individual rate.

The traffic study showed conclusively that the rates per call collected from individual subscribers in different classes varied from 10 cents per call to less than 1 cent per call; certain of the larger users securing calls at a cost of less than $\frac{1}{2}$ cent. Such variation is manifestly unjust and inequitable.

The gross collection of your company for exchange service in the entire metropolitan and suburban district was slightly less than $3\frac{1}{2}$ cents for each completed call.

It is plain, therefore, that the larger users having unlimited rates covering the whole of the suburban area, who pay from $\frac{1}{2}$ cent to 2 cents per call, are paying less than cost, and this has to be made up by the smaller users paying from 6 cents to 10 cents per call.

This latter collection was necessary to enable your company to secure an adequate revenue from the subscribers in the district as a whole, but was necessary only because a proportionately few subscribers obtained their service at this extremely low and unprofitable rate, sometimes so low that it does not even pay the wages of the operator, to say nothing of the much larger expenses required for interest, maintenance, taxes, etc. The evident injustice of this condition the Commission has sought to abate.

The Commission, therefore, instructed its experts to report a schedule of rates which would not only reduce the net yearly income in the metropolitan and suburban districts from \$300,000 to \$400,000 yearly, but which would be founded upon a rate for small users of a maximum charge of 5 cents a message for a minimum number of guaranteed calls.

This resulted in the experts reporting a recommendation for the establishment of zones and a new schedule of rates therein as the only practicable way by which rates can be secured to this district which are fair, proportionate and equitable.

The establishment of zones seems the only practicable means of securing the lowest possible rates for the moderate user of calls, who only needs a limited territory.

It is the only possible way by which any unlimited telephone service can be properly retained and an adequate revenue secured from the district without charging the loss to the smaller users, or by which the maximum rate per call can be reduced to 5 cents.

The toll charges recommended cover as long a distance at as low a rate as seems, even in such a densely populated district, compatible with securing for the company an adequate revenue.

The basic principle of the scheme of Prof. Dugald C. Jackson, the expert for the Highway Commission, is that each subscriber should pay the company enough to meet proper interest on the investment devoted to his particular service, and the running expenses, construction and depreciation charges and the like with which his portion of the plant and of the services rendered are chargeable; also that no subscriber should pay a larger proportion of the company's profit than is chargeable to his proportion of the plant and the use he makes of it. In other words, that each user should pay for what he gets and for no more than he gets.

Briefly stated, the zone system referred to is an arrangement of the metropolitan and suburban exchanges in groups, within which the character of the population, business interests and the requirements of telephone users are in a general way similar. The seven metropolitan exchanges are grouped in one zone. Outside of that area, each suburban exchange is made the center of a zone which includes this central exchange and all the exchanges whose territories border on that central exchange. Thus there are as many zones as there are suburban exchanges, and these zones overlap each other, so that any individual is always included in the same telephone unit with his neighbors.

By the new scheme all the present four-party lines would become two-party lines with divided ringing, which makes at the outset an improvement in the quality of service. The yearly price for this service would be \$30 in the densest zones and decrease to \$27 for zone G (Hyde Park), \$24 for zone F (Winchester), and \$21 for zone E (Reading). This price covers unlimited messages within the zone itself. Calls going to another zone would pay a toll of 5 cents. Calls to the metropolitan exchanges would pay only 5 cents within an eight-mile radius from the Boston center. The present charge for a four-party residence line with unlimited suburban calls is \$30 a year. The reason for the change was that the inter-zone messages are not now paying the actual cost of switchboard attendance. By collecting a 5-cent toll for inter-zone messages this objection is met, and thus permits a reduction in the cost of unlimited service within a given zone. This would, it is believed, result in a lessened annual charge in the case of most residence telephones, where most of the service is purely local.

One noteworthy detail of the financial statement made by the engineers concerning the telephone company is that a careful engineering appraisal of the company's entire property showed that for each \$100 worth of property the company had outstanding only \$83.67 of par value in stocks, bonds and notes. Not only was there no water in the company's securities, but much of its plant had apparently been paid for from the income.

In discussing the report Mr. Benjamin Baker calls attention to the fact that the telephone situation differs in some respects from that of other public utilities. Telephone connection depends for its practical value a good deal on how many persons the individual subscriber can reach by wire from his own house or office. It is, therefore, not merely a private, but a public desideratum that every telephone system should include as many subscribers as possible. The expansion must be chiefly among the small users—those whose affairs do not require a large use of the telephone, and whose finances do not allow of paying a yearly rate. Such subscribers should be offered a rate that will give a reasonable profit to the company on the cost of operation and also pay a share of the fixed charges. In some cities telephone companies have somewhat inverted this idea and have made the lowest rates to the largest companies,

whereas such companies should be willing to even contribute a portion of the cost of telephone service to private individuals who might be expected to be their customers, since telephone connection with such adds to the value which they obtain from the service.

TYPHOID AND CITY OFFICIALS

What the Mayor and City Council Can Do in the Prevention of Typhoid Fever—Support Health Board —Precautionary Measures

UNDER the title "What the Mayor and City Council can do in the Prevention of Typhoid Fever," the U. S. Public Health and Marine Hospital Service has published a pamphlet written by Passed Assistant Surgeon L. L. Lumsden, in which he outlines in brief under ten heads the assistance which can be rendered by such public officials to the cause of public health; first discussing the prevalence of typhoid fever and the nature and source of the infection. The ways in which the Mayor and Council can act to prevent typhoid are named as follows:

(1) *Become informed as to the nature of the infection, its modes of spread, and the methods to prevent it.*—This information is now readily available. It may be obtained by applying to the local health office, the state board of health, or to the United States Public Health Service at Washington. Any one possessed of moderate intelligence can learn this simple lesson in hygiene, and it is the plain duty of every good citizen, particularly of those composing the governing body of the municipality, to at least try to learn it.

(2) *Make disease prevention a conspicuous policy of the administration.*—Such a policy is undoubtedly a most praiseworthy one, and if adopted with common sense and propriety can be made a most popular one. A candidate for reelection to the mayoralty or city council can point unhesitatingly to his achievements in protecting the health of the people as one excellent reason for his continuance in office. It has been remarked that "practical politicians in a municipality usually regard the health office, not as a political asset which may be used to advantage in campaigns, but as a grave liability with a great capacity for getting the administration into trouble." This estimate is not necessarily correct, and within recent years it has been realized in a number of instances that the good records of the city health office may be used as one of the winning cards in local campaigns.

(3) *Make efficiency the primary basis of appointments to positions in the health office.*—It is the health officer's success in disease prevention and not his particular political affiliations which will reflect credit upon the administration. His work is of a highly specialized character requiring of him, for its successful accomplishment, special technical training. The intelligent individual citizen, when ill, engages as his physician one whom he believes to be skilled in his profession, and in his selection gives little or no consideration to the political affiliations of the physician. The municipality should exercise similar intelligence in selecting its physician—the health officer. The administration in retaining in office an efficient city health officer who has been appointed by a previous administration deserves, and usually will get, the approbation of the people. The administration in dismissing from office such an incumbent and appointing in his place a decidedly less efficient man deserves, and should get, the grave censure of the people.

(4) *Provide adequate salaries for health officers.*—The salaries paid health officials, particularly of cities having less than 100,000 population, are, as a rule, ridiculously small. In consequence, active and efficient services can not be expected. The man of ability who holds the position of health officer usually can not afford to give up his other and more lucrative work in order to devote his time exclusively to the duties of the health office. The salary should be made commensurate with the duties and responsibilities of the position, and the munici-

pality should then demand that the duties of the position be energetically performed.

(5) *Appropriate funds for sanitary improvements as liberally as the taxation rate will permit.*—In the average municipality there are so many public improvements needed which the funds of the treasury are inadequate to provide that it is, no doubt, very difficult at times for the municipal authorities to determine to what purpose the scanty funds can best be put. Of the conditions affecting the welfare of the whole people of a community, a good sewerage system and a good water supply are certainly among the most vitally important. If the treasury funds are insufficient to provide these, the city authorities should keep the facts clearly and persistently before the people. By so doing, the people eventually may be made to understand and become not only willing but anxious to supply the necessary funds.

(6) *Provide for the collection of mortality and morbidity statistics so that the results of sanitary work may be known.*—This can be done with very little cost to the municipality. The enactment of an ordinance requiring physicians to report cases of infectious disease, and undertakers to file certificates of causation of death in order to obtain burial permits, will accomplish it. Without these statistics, which are the "book-keeping of sanitary science," it is practically impossible to tell what progress is being made. In some instances the attempt may be made to conceal the facts about health conditions in a city for fear that if the conditions become known the business interests will be injured. It is just about as easy for a community to succeed in such concealment as it is for a man to conceal the fact that he has a broken leg by making efforts to run. The tactics are bad and the results usually disastrous. It certainly seems more in accordance with sound business principles for a city to know its health conditions, to improve them, and then use the improved conditions as a basis for legitimate advertising.

(7) *Provide for the proper care of the sick.*—For every case of typhoid fever originating in a municipality, the municipality is to a large extent responsible. The patient's bedside is a fountain head of infection. There the infection may readily be destroyed, but once allowed to escape from there, it may be disseminated in various ways and become very difficult, or practically impossible, to trace and destroy. Therefore, the municipality, not only on account of its ethical obligation for the development of the case, but also to safeguard the community, should provide for the necessary precautions at the bedside of the patient. If the patient's family can not be coerced into carrying out the measures, the municipality should provide either hospital accommodation or free nursing and disinfectants.

(8) *Keep in close touch with and support the health officer in his work.*—You fight a common enemy, and unless you have concerted action you can not expect to wage a successful warfare. When the mayor and city council can not agree with the health officer on the plan of campaign, it is time either for that mayor and city council or for that health officer to be removed from office.

(9) *Cooperate with the authorities of other municipalities, of the State, and of the nation.*—A municipality which dumps its untreated sewage into a stream used as a source of water supply by municipalities downstream can not consistently ask the municipalities upstream not to pollute this water with their sewage. In sanitation, municipalities, even as individuals, may adopt to practical advantage the good old golden rule "to do unto others even as you would have them do unto you."

(10) *Teach by precept and by example the precautionary measures.*—The mayor and the city councilmen have been honored with the confidence of the people and have been appointed to the leadership of the municipality. Therefore their conduct, in respect to the simple rules of sanitation at least, should be exemplary. What they do quietly and consistently to safeguard their own households may impress some of their neighbors more profoundly than what they proclaim from the rostrum in the heat of political campaign. If they believe the water is

polluted, they should use boiled water in their own homes. If they believe the milk supply is dangerous, they should have it pasteurized before giving it to the members of their own households. If they believe that from faultily disposed of sewage disease may be spread, they should have sanitary water-closets or privies at their own homes. In short, teach by deeds as well as words.

Such are some of the things which the mayor and city council can and should do in the prevention of typhoid fever. Summed up, just this: They can and should do their plain duty as city officials, as citizens, and as men.

And let no one suppose that this is a matter in which he has no personal interest. The duty itself we may evade, but we can never be sure of evading the penalties of its neglect. This disease not seldom attacks the rich, but it thrives most among the poor. But by reason of our common humanity we are all, whether rich or poor, more nearly related here than we are apt to think. The members of the great human family are, in fact, bound together by a thousand secret ties of whose existence the world in general little dreams; and he that was never yet connected with his poorer neighbor by deeds of charity or love may one day find, when it is too late, that he is connected with him by a bond which may bring them both, at once, to a common grave. (William Budd, *Typhoid Fever*, London, 1873.)

FASHION IN WATER PURIFICATION

By GEORGE C. WHIPPLE

(From a paper before the Central States Water Works Association, entitled "Clean Water as a Municipal Asset.")

NOTWITHSTANDING expert advice, the practice of following the leader is far too common. A method perfectly successful in one city is adopted by others only to find that it does not fit the conditions. The styles of water purification plants do not change as rapidly as those of ladies' bonnets, nevertheless waves of popularity occur even in matters scientific. This is well illustrated by the recent history of the septic tank. Taken up from a long career of obscure usefulness, it became famous because of its usefulness in certain places, because of the widespread scientific interest in the theory of its action, and it must be admitted, partly because of the obscurity surrounding the work of the mysterious anaerobic bacteria. Visitors from Europe now tell us that the popularity of the septic tank is on the wane—not that it is being abandoned altogether, but rather its proper sphere of usefulness is being found and its use limited to that. Meanwhile other phases of sewage disposal are looming large in the scientific press.

Or, to take an illustration from water purification, the preliminary filter of coarse material worked at a high rate is sometimes a useful and appropriate device, but its field of usefulness is extremely limited. The attempt to use it to assist in the removal of colloidal matter, while moderately successful, is usually more expensive and much less efficient than the use of a suitable coagulant. These waves of scientific interest in this or that process are indications of progress, but the crests of the waves do not measure the true sea level. And the writer believes that the disinfection of water will have a similar history, that when the initial enthusiasm has subsided it will take its place, an important place, no doubt, but one subsidiary to the long established methods of obtaining clean water.

MUNICIPAL GOLF LINKS

A NUMBER of cities in Great Britain have provided or taken over golf links for public use, among these being Brighton and Nottingham, one course each; London, Troon and Bournemouth, two each; Glasgow, Hull and Edinburgh, ten. Bradford is considering taking over a course now privately owned, and Liverpool and Manchester are said to be arranging for municipal links. Each of the cities mentioned receives from the links an income slightly more than the expenditure. The cost of laying out was: Bournemouth, \$22,000; Brighton, \$5,000; Glasgow, \$366; Troon, \$10,500. Certain of the incomes and expenditures were as follows, respectively: Bournemouth, \$15,412, \$14,429; Glasgow, \$5,548, \$4,925; Troon, \$4,594, \$4,477.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Boardwalk 7 Miles Long

Atlantic City, N. J.—A dream of 10 years has been realized by the completion of a link of the Boardwalk at the junction of Ventnor City and Margate Park, which makes the famous Atlantic City promenade a continuous structure from the Inlet to Margate, a distance of more than 7 miles. With the erection of less than half a mile of additional walk, which will be contracted for in a few weeks, the promenade will be an unbroken walk from the Inlet here to the Inlet at Longport, girding the sea front of the island from end to end, more than 10 miles.

Commemorate Opening of Jacob's Ladder

Becket, Mass.—In the presence of 2,000 people with music and cannon salutes a boulder with appropriate inscription was placed side of the highway known as Jacob's Ladder for the purpose of commemorating the opening of the road across the Berkshire hills, formerly almost impassable, which with connecting roads joins the New York and Massachusetts State systems of highways.

Grand Jury Inspects Roads

Chester, Pa.—That the supervisors of townships in Delaware County are responsible for the proper maintenance of roads in their districts was impressed upon the minds of the members of the grand jury for the September term of court, and the body was instructed to view roads in Aston and Springfield townships and to make presentments if believed advisable for the public good. Presentments would open the way for prosecutions by the District Attorney against the supervisors if such procedure should be deemed necessary. The supervisors of Aston and Springfield township are not to be judged summarily, but as the question of the condition of several roads has arisen, the grand jury will visit the roads named and conduct an investigation.

Municipal Asphalt Workers Get More Pay

Decatur, Ill.—Laborers in the street department patching asphalt pavement quit work last week because their demand for an increase of pay had been refused. They had been paid 25 cents an hour and demanded 30. Street Superintendent Lemings explained to Council that he was willing to pay the men 30 cents an hour, but there was an ordinance in force that seemed to prohibit it. The matter was referred to the city attorney to devise a way in which the men might be paid at the increased rate.

Street to Be Paved in Sections

Pasadena, Cal.—Something new in the line of street improving will be tried out on the big California street paving job when Louis A. Bartlett does the work. Instead of tearing up the street from end to end, the street will be paved two blocks at a time, each section being finished before another one is broken up for improving. This paving on the installment plan is the outgrowth of the delay in getting the South Lake avenue job completed. The delay there is occasioned by the tardiness in finishing up the street railway's share of the work.

Women Advocate Ornamentation of Roads

Waterloo, Iowa.—The Iowa Federation of Women's Clubs has decided to join in the good roads movement in this State. The club women will accept the invitation of the district conferences called in the interest of better highways and will send representatives to these meetings to be held during the next few weeks in several different parts of the State. While the men are agitating the advisability of making drag roads or establishing cross-State highways, the women in attendance at these conferences will make a plea for the abolition of landscape disfiguring sign boards and that trees be planted along the cross-State routes that the roads might be made shady and more beautiful.

Trouble Over Errors in Sidewalk Grades

Meadville, Pa.—If Mayor Graff carries into effect a promise made in the Council Chamber last week, there is trouble in store for some local contractors who are alleged to have been building sidewalks without first securing from the city civil engineer's office the proper lines and grades. There has been a lot of that kind of work done, hundreds of feet of cement and stone sidewalks put down without the formality of securing from the engineer's office the proper grade and lines, said the Mayor, and it is certain to cause trouble in the future, as it is impossible that much of such work could be correct. The Mayor added that several of the contractors had been warned not to build sidewalks for anybody without having the lines and grade first staked out by the city civil engineer, and that in several cases such warnings had been ignored. The trouble is not for the present, said the Mayor, but it will come when it is discovered that the walks are not according to the proper lines and grades, and then the owners come before the Councils and claim that the lines were furnished by the city, as Mayor Graff alleges, has been done in some cases.

Multiplicity of Surveys Makes Trouble

Niles, Ohio.—Surveys made by engineers who have served the city in previous years which did not coincide in every detail, nor with the surveys made by the present incumbent, are now threatening to cause the city no end of trouble. This is especially the case with the Clingan property and the grading of Neal street, and the city may possibly be sued if it attempts to cut down the latter to a 50-ft. grade as is now proposed. Altogether six surveys have been made of this street and none of them agree in every particular. The street committee and Engineer Brewer will endeavor to unravel the tangle with the assistance of Solicitor Smith in a tour of investigation.

Mayor Would Sand Slippery Streets

Portland, Ore.—Mayor Simon has directed Councilman Watkins to confer with Superintendent Donaldson, of the Street Cleaning Department, in regard to the protection of horses on slippery streets. It is Watkins' idea that the pavements should be sanded, especially during damp and frosty weather to prevent horses from falling and injuring themselves. He has letters from officials of various cities in regard to the matter. Sand is used on the pavements in London, England; Buffalo, N. Y., and Denver, Col. When the pavements are covered with frost or otherwise become slippery sand or fine gravel is thrown upon them, thus giving the horses a sure footing. In Cincinnati rubber shoes are placed on the horses.

Will Not Pay for Asphalt Pavement

Schenectady, N. Y.—Property owners on Duane Street have decided to fight any move the city may make to accept the asphalt pavement laid on that street four years ago for \$1.41 a sq. yd. A. W. Dow, chemical engineer, New York, who was called in consultation about the matter, said he could not state that the work was not in accordance with the specifications because the specifications were practically meaningless. Mr. Dow further stated that the asphalt used was supplied by the Barber Asphalt Company and was of a grade which that company notified the trade last spring that it would no longer manufacture.

Will Mark Streets with Brass Letters

Lexington, Ky.—The system of marking the streets with brass letters will be tried in Lexington at an early date. Mayor Skain has ordered a number of the brass letters which will be about an inch and a half high and will be imbedded in the sidewalk at the street corners. The system will be used only on limestone to begin with, but if they prove satisfactory they probably will be used for use on all the streets.

SEWERAGE AND SANITATION

To Forbid Occupation of Unsanitary Dwellings

Binghamton, N. Y.—It is probable that the Department of Health will soon take action relative to conditions existing in Downsville and forbid the renting or occupancy of certain houses in the low portion of that district which are constantly surrounded by water and have water continuously in their cellars. For several years the department has feared the outbreak of an epidemic in Downsville because of unsanitary conditions. These are due not to the negligence of property owners, but because of natural conditions which prevent the proper drainage of that section. The southern portion of Downsville is practically on a level with the brickyard pond, which frequently overflows, flooding the section. The land is of a clay soil and the water stands in ponds that in summer are covered with green slime. When heavy rains occur the water overflows cess pools, carrying the contents into cellars where they are deposited, making an excellent bed for disease breeding germs.

To Better Gowanus Canal

Brooklyn, N. Y.—At a hearing at the City Hall in Manhattan last week the project of bettering the condition of the Gowanus Canal was gone over with representatives of the Merchants' Association of New York, the Metropolitan Sewerage Commission, by Borough President Alfred E. Steers and Chief Engineer Fort, of the Brooklyn Department of Public Works. The project is now well under way, but the decision as just how to dispose of the pumpings from the canal was the matter for argument. Some of the representatives of the New York association favored the pumping of water from the bay into the canal, forcing the sewage out through the mouth of the canal.

Chief Engineer Fort held that the desired result could be best obtained by taking the clear water from the bay and drawing the polluted waters of the canal through the sewer to the foot of Degraw Street. The contention of Engineer Fort was that there is always a strong eddy at the foot of the canal in the bay, but that at Degraw Street there is a swift tide, which will rapidly carry away the sewage, instead of allowing it to collect as it would if it was forced directly out of the canal. Borough President Steers also favored the Fort plan, and the matter was taken under further advisement.

Reject Low Bids on Sewage Disposal Plan

Chatham, N. J.—Though Gutena Costa, of Orange, was the lowest bidder for the construction of the sewage disposal plant, his bid being \$1,760 lower than J. W. Heller, of Newark, his bid was rejected last week, because it was pointed out that the Costa firm had had the contract for the construction of the Morristown sewers, and that city had declared his work faulty. A suit had been instituted by the firm against that city over payment for the work. Costa's bid was \$56,936 and Heller's \$58,696. The joint councils of Chatham and Madison thereupon awarded the contract to the Newark man.

Big Sewer Collapses

Covington, Ky.—The mouth of the big 7-ft. sewer opening into the Licking River at the foot of Eighth Street caved in last week, causing damage which is estimated by Superintendent of Public Works Woods at \$1,000. A hole over 100 ft. wide and over 30 ft. deep was caused by the cave-in. It is thought the recent raise and "run out" of the Licking loosened the mortar and bricks, causing the cave-in.

Sanitary Homes for the City's Poor

Los Angeles, Cal.—Plans for small, sanitary, inexpensive homes for poor people, which have been prepared under the direction of Mrs. Oliver P. Clark, president of the Friday Morning Club, and Mrs. Egelhoff Rundel, have been officially approved by the Municipal Housing Commission. The women are back of a plan to build a number of these small dwellings for people who now live miserably in house courts, shacks and other objectionable habitations. They are to be of hollow tile and plaster, with plenty of light and air. Two-room cottages may be built for \$650 and double cottages containing two three-room apartments, for \$1,400. Six cottages are to be erected as a beginning.

Orange Sewer Connection Will Be Finished Soon

Orange, N. J.—A few days more will see the connection between the Orange and West Orange sewers an accomplished fact, and after that the pollution of the Second River in East Orange and the Wigwam Brook in Orange will be a thing of the past. The arrangement between the two municipalities will relieve the burden on the northern section of the West Orange sewer and prevent the overflow from the mains in that section into the brook, which has been the cause of trouble for a number of years. The nuisance has been the subject of many a debate or conference between the offending and the offended communities, and promises have been held out from time to time of immediate relief. At one time Orange planned to add to its sewer equipment an expensive pumping plant to replace the one which has been inadequate almost from the start, but about that time the deal with Orange was begun, and now the only proper relief is at hand.

Sewer Company Would Enjoin Municipal Sewerage

Phoenix, Ariz.—The threatened action of the Phoenix Sewer & Drainage Company against the city of Phoenix to restrain the defendant from proceeding with the construction of a sewer system has been begun in District Court. The papers were filed by Thomas Armstrong, Jr., attorney for F. S. Lack, the principal owner of the sewer system.

WATER SUPPLY

Clean Water Argument for Annexation

Cincinnati, Ohio.—Water Works Superintendent Laidlaw has issued a card showing the effect of filtered water upon the number of cases of typhoid fever and the card is being used with great effect by annexationists, who say that contiguous villages can thus secure the benefit of germ free water and at the same time reduce the number of cases and deaths from typhoid fever.

The card shows:

"Unfiltered water from old works: In 1905, 746 cases; 155 deaths. In 1906, 1,940 cases; 239 deaths. In 1907, 1,252 cases; 157 deaths.

"Filtered water from new works: In 1908, 235 cases; 67 deaths. In 1909, 218 cases; 45 deaths.

"Average number of cases and deaths from typhoid fever per 100,000 of population: For three years before introducing filtered water, 379 cases and 53 deaths; for two years after introducing filtered water, 65 cases and 16 deaths.

"Percentage reduction in typhoid fever due to a purified water supply: In cases, 83 per cent; in deaths, 70 per cent."

Cleveland Needs Better Water

Cleveland, Ohio.—Health Officer Friedrich declined in positive terms to make any public reply to Superintendent Smith, of the Water Works Department, concerning his attitude on the water filtration question. Superintendent Smith believes that the West Side tunnel should be extended with funds derived from the sale of bonds, the issue of which was authorized by the Council last May. The total cost of the tunnel extension will run to about \$1,100,000. It is Dr. Friedrich's belief that the funds should be expended in filtration. Superintendent Smith, of the Water Works Department, does not believe that the typhoid cases can be traced to the water supply. The contagious disease report for the week showed that out of a total of 130 new cases of contagious diseases typhoid had the leading place with a total of 39.

Would Purchase Water Works at Master's Valuation

Des Moines, Ia.—Following the report of George Henry, Master in Chancery, placing the value of the Des Moines Water Works at \$1,854,825. Councilman John MacVicar says he has asked the solicitors to advise the commission whether the law will now warrant a movement on the part of the city to condemn and take over the plant. Though the value is \$1,000,000 higher than the city might have bought it for thirteen years ago, and as he believes the values added to the plant have come from the earnings under the rates paid, Mr. MacVicar believes it advisable to purchase the plant at that price, as further delay would only mean an enhanced value. The city's attorneys will probably appeal the case to the United States Court, but that may not prevent the condemnation proceedings from going on.

Progress on Washington Coagulating Plant

Washington, D. C.—Good progress is being made in the construction of a coagulating plant as an auxiliary to the District water supply system. It is located just south of the Dalecarlia or receiving reservoir, on the Conduit road, at the District line. A large pump pit, with concrete foundation and walls and a concrete floor over the pit, has been already constructed. The walls of the pit are coated with tar. A terra cotta sewer will carry the refuse from the pit. This portion of the work has been done by hired labor under the supervision of Captain Hannun's Corps of Engineers. A brick building will be built on the pit foundations, at a cost of \$16,000. A contract for that work has been entered into with William P. Lipscomb & Co., of this city. Congress appropriated \$27,000 for this plant. It is designed for the preliminary treatment by a coagulant of the Potomac water entering the system at Great Falls before it reaches the filtration plant near Howard University.

Night Work on New Dam

Waterbury, Conn.—Plans are being made by Ryan, Umack & Co. to employ a night force on the dam at the new reservoir in Morris. The present force of laborers will be doubled up and the unique spectacle seen of a hundred men or more at work under the beams of giant 3000-candlepower lights. The contractors have not been able to accomplish as much work as is required by the contract, and they have taken this way of catching up, as the quantity is not what it should be to get the job finished on schedule time. A second crew will be secured for the big steam shovel, engineers and crews for the locomotives and cars running on the excavation work, and a hundred more laborers employed. There will be a day force and a night force at work hustling to make the speed required. There are 500 to 600 cubic yards being moved daily now, and this will be brought up to 1200 when the two forces are at work. It is the intention of the contractors to install a number of 3000-candlepower lights about the scene of operations, so that the whole place will be lighted nearly as well as in the day. The new concrete mixer and the stone crusher are working fine and a large amount of concrete is being laid. The contractors have installed a dredge for taking out sand from the meadow that City Engineer R. A. Cairns says is as clever as anything that he has ever seen. There is but one spot in the whole valley where sand can be secured, and the dredge was needed for getting it out economically. The process includes the washing and drying of the sand and is much more economical than hauling it from Reynolds Bridge.

Macon Company's Valuation of Its Plant

Macon, Ga.—The Macon Gas Light and Water Company values its water plant at the sum of \$800,000. This appraisal was put upon it in a letter to Council, declining the offer of \$500,000. The city thinks that the plant is worth a half million. The water company estimates its worth at \$800,000. This calls for the board of arbitration, which will shortly be appointed. Whatever price the arbitrating board decides upon will be acceptable to both parties, and will be submitted to the voters of the city at a popular election for approval or disapproval. If the price is approved, the decision of the voters will carry with it the authority for the City Council to issue bonds to that extent.

Mexico City's New Water Works System

Mexico City, Mexico.—In the presence of a large company of distinguished guests, including foreign envoys and commissioners to the Mexican Centennial of Independence celebration, the new water works system of Mexico City was inaugurated September 21 by Vice-President Ramon Corral. The government officials, cabinet officers and visitors went to Xochimilco by special train, and a champagne lunch was served after the official ceremonies.

Fruita Protects Its Water

Fruita, Col.—The entire watershed of the town of Fruita has now been fenced in, enclosing a tract four by five miles. This land was recently turned over to Fruita by the National Government through the efforts of Congressman Taylor, and the fencing was to insure the purity of the water sources. Hitherto cattle have wandered about in the watershed.

Charge Mains to Realty

Kansas City, Mo.—The Board of Fire and Water Commissioners has been asked by Mayor Brown to take up the proposition of making the extension of water mains a charge against the real estate on a street instead of putting the burden on the water users. The Mayor received a reply from the Board last week saying that the subject would require careful study to overcome some of the difficulties that might be presented, arising from the fact that the mains already have been constructed in a large part of the city without charge to the real estate. But the Board promises to make an effort to work out a solution of the problem as soon as some of the more urgent water works improvements now in hand are under way. The Mayor is supported in his purpose in a letter he received last week from J. R. Gilmer, a Member of the Board of Public Works, who discusses the objection that a large part of the city now has "free mains." He wrote:

I note with satisfaction your favorable attitude toward the policy of bringing the extension of water mains within the operation of our special tax system. The only plausible objection to the change is that most of the old part of the city has been provided with water mains free of charge to the property, and it therefore would be unjust to make the property in the unwatered parts bear all the burden of its extension.

This objection, however, is more plausible than sound. It is unquestionably true that the extension of a water main to any given piece of property largely increases the value of that property, which increased value is simply given the owner by the city. It is clearly unjust that funds collected from the consumers of water should be given away to private persons. It never should have been done; but does the mere fact that the city has been improperly giving away public funds constitute any valid reason why it should continue that injustice forever?

Now is the time to make the change. The city is pretty well watered in the old limits. The new territory cannot complain that it has helped to pay for watering the old, for it has not. That complaint will have some semblance of validity in a few years, unless we change.

If it be thought that an immediate change would constitute too much of a shock to the expectations of the owners of unwatered property the new system could be adopted gradually, by assessing say 20 per cent of the cost of extensions against the benefited property the first year, 40 per cent the second year and so on until this change is made.

Whatever method may be adopted, however, the present system is indefensible and should be abandoned.

Puts O. K. on Moorestown Water

Moorestown, N. J.—Dr. F. G. Stroud, Health Inspector of Chester Township, has received a long communication from the State Board of Health stating that the Moorestown water sent for examination in several instances showed a high degree of purity. Some alarm was felt in the town over the development of a couple of cases of typhoid fever, but upon high medical authority it is said they were both contracted elsewhere.

Water for Westchester

Mt. Vernon, N. Y.—New York City has come to the rescue of water-starved Westchester. Commissioner Thompson, of the Department of Water Supply, Gas and Electricity, saw Mayor Fiske of Mount Vernon afterward issuing an order which will allow the Mount Vernon authorities to draw 2,500,000 gallons daily from the New York mains for four days and 5,000,000 gallons a day for thirty days thereafter. Commissioner Thompson reserves the right to cancel the permit without notice. The supply will be drawn first from the mains at the Boston Post Road, whence it will be taken into the Mount Vernon system. The connection for withdrawing the 5,000,000 daily supply will be made between the blow-off at Ardsley and the Mount Vernon mains. Mayor Fiske spoke in the most emphatic terms of the great sanitary danger and inconvenience to which the water famine had subjected Westchester.

Will Hold a Carnival to Celebrate New Illumination

St. Louis, Mo.—The Meramec Improvement Association held a carnival in celebration of the illumination installed on Meramec street, between Louisiana and Compton avenues. Some special features of the carnival were a free music concert every night during the week, several prominent citizens having been invited to make addresses. The illumination has been subscribed for by the merchants and property owners on Meramec street for one year at a cost of \$95 a month. The Meramec School Patrons' Association will hold a meeting at Schneider's Hall, Keokuk and Broadway, Wednesday evening, to induce the Board of Education to give them an eight-grade school, which they say there are sufficient number of children in the district to justify.

Elmira Wants Municipal Water Works

Elmira, N. Y.—At a public meeting in the Lyceum Theater a report was read from a committee of citizens that had been appointed to investigate the advisability of municipal ownership of water works. The committee reported that municipal ownership had invariably led to a reduction in rates. In order to bring pressure to bear upon members of the city government to bring about the desired result it was decided to form a municipal water works league. Sufficient funds will be raised to employ such consulting engineers as may be needed. Francis E. Baldwin is chairman of the committee that made the report.

Substituting Artesian for River Water

Jackson, Miss.—The Jackson Water Commission, composed of W. M. Anderson, J. R. Dobyns and B. G. Beaulieu, are now actively engaged in the negotiations attendant on the actual development of the new artesian water plant which the city is preparing to substitute for the present Pearl River system. While all the wells necessary to provide the 4,000,000 gallons a day which it is deemed necessary to provide adequate fire protection, industrial, mercantile and household uses are not finished, this part of the work has progressed so far and the outlook for the supply necessary so promising that the commission has closed the purchase of a tract of land for the general plant, reservoir, pumping house, settling basins and other adjuncts necessary. On this site three wells are already down, and the fourth is being drilled, which the contractors expect to successfully bring in in very short order. When this is completed the Water Commission will close contracts for the necessary building to be done. It is hoped to have the complete new system in operation during the next few months.

Detroit River Water Impure

Lansing, Mich.—In a statement issued by Dr. M. L. Hahn, of the State Health Department, he says that an analysis has shown water taken from portions of the St. Clair and Detroit rivers to be highly contaminated and likely responsible for fever epidemics.

Water Unfit for Domestic Use

Lockport, N. Y.—The water supply in Tonawanda, North Tonawanda and Lockport, according to the reports issued from the State Department of Health, is unfit for domestic use. The State Health Department made tests of the water in each of the above mentioned cities and it was found that Tonawanda has the best supply, while Lockport's supply is the worst. North Tonawanda's supply, according to the report, contains much free ammonia and its bacteria count is 57,000 per cubic centimeter. Intestinal bacteria were found in the water. In Tonawanda the color of the water is better than the North Tonawanda supply, but the nitrate qualities found there were far higher than that shown in the North Tonawanda supply. The Tonawanda supply contains less solid matter and has a better odor. Lockport's water supply is very bad, according to the report. The tests made show that it has a color, that under the hot test its odor was musty and the same condition was found in the cold test. The supply contains more free ammonia than the Tonawanda or North Tonawanda water. It contained more solids and mineral residue than any other supply taken from the Niagara River.

Fifty Cases of Fever Draining Into City Water Supply

York, Pa.—Health authorities of this city are greatly exercised over the reporting of 50 cases of typhoid fever in Glen Rock, upon the branch of the Codorus Creek, from which York's water supply is obtained. Some of Glen Rock's sewage drains into this branch, and warning has been given that residents of York should boil all water to be used for drinking. State health officers are now at Glen Rock investigating conditions.

Wants \$50 for Hydrant Rental

Pekin, Ill.—The Pekin Water Works Company has sent a notice to the Mayor and Council reciting in a general way the expense it has gone to in installing larger mains and hydrants for fire protection. A report by Prof. A. N. Talbot to the effect that \$50 was a reasonable rental charge for hydrants placed as they are in Pekin is referred to and formal notice is given that the company will not supply the service for \$30, a figure set in a recent ordinance.

STREET LIGHTING AND POWER

Britton Electric Lighted Again

Britton, S. D.—For the second time in its history Britton again has an electric lighting plant. About ten years ago the town was lighted by electricity, but the plant was destroyed and not replaced until recently. The new plant is a fine one and Britton is one of the best lighted towns of its size in the State.

Progress of Ornamental Street Lighting in Duluth

Duluth, Minn.—The laying of the conduits for the Fifth avenue "white way" began last week, and it is anticipated that within a short time the brilliant clusters of globes on the ornamental standards will extend from the courthouse to the bay. Fifteen posts, each with five lights, will be erected on each side of the avenue, as well as in front of the Spalding Hotel, the Holland Hotel and the new Soo depot at Sixth avenue west. Work will be begun shortly to secure signatures of property owners on Superior street, from First avenue east to Sixth avenue west for the completion of the "white way" on Superior street.

Asks Natural Gas Company to Maintain Reservoirs

St. Joseph, Mo.—Initial steps toward securing for St. Joseph an adequate supply of gas for the coming winter were taken by the Public Utilities Commission when it instructed Secretary E. L. McDonald to notify the gas company to appear before the Excise Commission and show cause why it should not be compelled to build reservoirs or storage tanks in order to have on hand at all times sufficient gas to supply consumers. In bringing the matter before the commission, President E. H. Spratt recalled the past three winters, when during the most bitter cold weather breaking of the mains, or washouts or similar troubles have occurred to cause a cutting off of the large consumers and even then leaving the small consumers without enough gas with which to cook and heat their homes.

Municipal Light Plant Makes Low Rates

St. Louis, Mo.—After being forced by competition with the city's light plant to reduce charges from 5½ cents to 3¾ cents a kilowatt-hour, the Union Electric Light & Power Company has submitted to President Reber of the Board of Public Improvements a low figure for the contract to light the City Hall, old City Hall, Court House, Four Courts, Police Headquarters, No. 6 Engine House and the new municipal building. Just what rate the Union has offered President Reber will not say, but it is understood that it is less than 3 cents a kilowatt-hour. Some of the Union Company's contracts with private concerns, which consume much less current than the city will need for these buildings, are said to be on the basis of 2 cents a kilowatt-hour. In the seven years that the municipal plant in the City Hall has been in operation it has repaid in saving on current its original cost of \$70,000. At the same time the boilers have supplied heat for the entire City Hall. In 1903 the Union Company was receiving 5½ cents a kilowatt-hour for lighting the buildings. The threat of enlarging the municipal plant brought the price from 5½ cents to 4½ cents. In the contract that went into effect September 1 the rate is 3¾ cents. For several years the municipal plant has been producing current for less than 1½ cents a kilowatt-hour, excluding the cost of heating the City Hall. With that charge added the rate per kilowatt-hour has been about 14-5 cents.

Distributing Company Sells More Gas Than It Buys

Guthrie, Okla.—The Oklahoma City Gas Company buys its gas of a producing company. Then it sells the gas to consumers. Meters measure the gas to the company, also to the consumers. The auditor of the company testified before the State Corporation Commission that the company sold, in June, 20,000,000 feet more gas than it bought, according to the meters. This statement was a feature of the hearing before A. P. Watson, a member of the commission, who took up the complaints of Oklahoma City residents that their gas bills were doubling and trebling without cause. Dozens of consumers testified that their bills had increased unreasonably. This showing was so strong that the Commission took up the matter for an extended hearing.

Federal Government Obstacle to Improved Street Lighting

Syracuse, N. Y.—Uncle Sam is the chief obstacle in the way of the immediate extension of the system of ornamental electric lights in Warren street, from East Fayette to East Genesee streets, as desired by many property owners in those two blocks as a result of the success of the system now in operation in Warren street from East Jefferson to East Fayette streets.

In response to the numerous requests the Syracuse Lighting Company has been planning the northward extension of the present system of ornamental streets lights to East Genesee street. Signatures of many of the property owners and the proprietors of business places on both sides of the street have been obtained. The Government Building has a frontage of 100 feet in Warren street, a distance which would call for two of the ornamental lights. Owing to the amount of red tape involved, it would be a year at least before the necessary authority for the payment of the expense of operating the two lights in front of the building could be obtained, and the Lighting Company is now engaged in trying to figure out a way around the difficulty.

Considering Distribution of Owens River Water and Power

Los Angeles, Cal.—The City Council has decided to proceed to fix the city's policy with reference to the disposal and distribution of Owens River water and the power derived from it. A series of public hearings will be held in order that the matter may be considered from every point of view. A determination must be arrived at concerning the territory to be served and upon what terms. Whether the water will be supplied only to the citizens of Los Angeles or whether it will be furnished to adjoining municipalities or to the agricultural sections. There are also many legal questions to be solved, such as the power of the city to furnish water temporarily to agriculturalists and recover it when the city needs it for domestic purposes. Regarding power, the attitude of the city toward companies now having distribution systems will have to be considered.

Report on Inspection of Gas Meters

Washington, D. C.—The annual report of the inspector of gas and meters for the District has been made public. A comparison of the 1910 report with that for the fiscal year ending June 30, 1919, shows little change as to the purity of the gas supplied by the two companies in the jurisdiction of the District Inspector's office, or in the number of complaints, made either by the companies or by consumers in regard to the meters. Speaking of meter inspection, the report says:

During the last year this office inspected and proved 8,003 gas meters, classified as follows: 3,501 new meters, 743 company complaints, 1,022 consumers' complaints, and 2,647 repaired meters.

Requests for meter inspections were received from 955 consumers supplied by the Washington Gas Light Company. A careful inspection of these meters showed that 333, or 34.87 per cent were registering fast; average error, 5.22 per cent; 63, or 6.60 per cent, were slow; average error, 6.10 per cent; 558, or 58.43 per cent, complied with the legal requirements, and one failed to register.

Of 743 meters inspected on complaint of the company, 8, or 1.08 per cent, were fast, average error, 5.26 per cent; 382, or 51.41 per cent, were slow, average error, 25.75 per cent; 19, or 2.56 per cent, complied with the law, and 334, or 44.95 per cent, failed to register the gas passing through them.

Requests for meter inspections were received from 67 consumers supplied by the Georgetown Gas Light Company. Of this number, 21, or 31.34 per cent, were fast, average error, 5.20 per cent; 3, or 4.48 per cent, were slow, average error, 4.89 per cent, and 43 or 64.18 per cent, complied with the law.

Governor Appoints City Officers

Wickenburg, Ariz.—Governor Sloan has settled the internal troubles of Wickenburg town by appointing a Mayor and four Aldermen to take charge of the municipal machine and keep it in operation. The Councilmen are C. W. Platt, J. J. Orozoco, Oscar Jennings and William Beatzsch. Wickenburg got all tangled up on the occasion of the last municipal election. There was such dissatisfaction with what occurred that the election was contested and the case was taken into court. The court found the situation such that the election was declared null and void and the offices vacant. Under the law it is the duty of the Governor to fill vacancies in such cases, and he has now done so.

FIRE AND POLICE

Fire Auto Kills Young Woman

Boston, Mass.—Fatal injuries were received by Miss Anna A. Robinson, of Portland, Me., when Fire Commissioner Charles D. Daly's auto ran wild on Massachusetts avenue shortly after 6 o'clock September 21 and jumped across the sidewalk, crushing the young woman through an iron fence. She died at the General Hospital. Commissioner Daly, who had just entered upon the duties of the position, was not in the machine at the time of the accident. His chauffeur, William A. Connell, was driving the auto at a fast rate to the Commissioner's home in Brighton to take him to a stable fire in South Boston for which two alarms had been rung in.

Auto Engine Capsizes

Chattanooga, Tenn.—The automobile fire engine upset at the corner of Sixth and Market streets while responding to an alarm last week. The damage was slight. Two men were injured but not seriously. The damage to the apparatus is estimated at \$200. Despite the hard fall the engine was found in perfect condition, while the running gear was also in good order. However, the fenders were demolished, the radiator and compressed air chamber were damaged, and one side of the bed was split. Several other parts were broken that can be readily repaired. The engine was running at a reckless speed on the Main street, though a more direct and safer route could have been followed.

Two Fire Engines and Street Car in Collision

Youngstown, O.—A street car, an auto hose wagon and a chemical hose wagon with three horses attached were mixed up in an accident at Phelps and Federal streets Sept. 19, 7 p. m., which all but ended fatally. What happened was that the auto truck, turning the corner just as the horses were coming along, met them broadside. Two of the horses

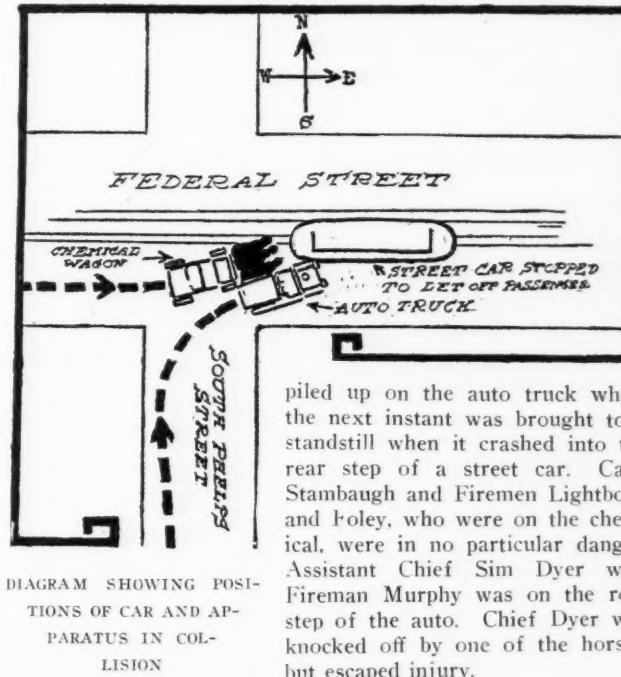


DIAGRAM SHOWING POSITIONS OF CAR AND APPARATUS IN COLLISION

piled up on the auto truck which the next instant was brought to a standstill when it crashed into the rear step of a street car. Capt. Stambaugh and Firemen Lightbody and Foley, who were on the chemical, were in no particular danger. Assistant Chief Sim Dyer with Fireman Murphy was on the rear step of the auto. Chief Dyer was knocked off by one of the horses, but escaped injury.

Answer No Calls Outside of City

Lockport, Ill.—The Mayor reported at the last Council meeting that he had instructed the driver of the fire department team not to go outside the city limits to fight a fire. He said it makes an additional cost to the city for drying the hose to say nothing about the wear and tear of the apparatus, and he said the city is not able financially to meet any obligations from that source.

Anti-Lobbying Act Is Passed

Portsmouth, Va.—When the Board of Police Commissioners met last week the anti-lobbying resolution, adopted illegally at a meeting several months ago, was repassed, and is now effective. It holds any policeman who engages in lobbying for or against legislation sought by the Police Board guilty of insubordination and liable to punishment on trial by the Board.

Oak Park Improving the Fire Department

Oak Park, Cal.—New equipment is constantly being added to the Oak Park Fire Department in an effort to make it equal to the demands of the rapidly growing suburban community. A fire station, a horse-drawn hose cart, proficient



Courtesy Sacramento Bee.

NEW FIRE STATION, OAK PARK

officers and paid fire-fighters are among the additions of the last two or three months.

A new system is about to be inaugurated in having paid call men stationed in different sections of Oak Park, so as to insure quick response to alarms from any part of the district.

Annual Report of Louisville Police Department

Louisville, Ky.—The annual report of Col. H. Watson Lindsey, Chief of Police, shows that 413 men composed the police force, of which number there are 58 officers, one Chief of Detectives, one secretary of the Police Department, one secretary of the Detective Bureau, one stenographer, one messenger in the Chief's office, 10 detectives, 12 district detectives, one property clerk, one printer, one Police Court officer, six chauffeurs, two auto guards, 26 station-keepers and 23 wagon guards, leaving 268 men, who actually patrol beats. The number of arrests made during the fiscal year was 14,183, the largest in the history of the department. The majority of these were for petty offences and violations of the city ordinances.

During the year the new Highland substation, located at Bardstown road and Rosewood avenue, was opened. As soon as the new auto patrol is ready for service in the central district, Chief Lindsey intends to send the automobile doing the work there to the Highlands. Chief Lindsey also recommends the purchase of a new automobile for the Seventh police district. An innovation in the department during the past fiscal year has been the introduction of a desk sergeant at Central Police Station. His duties are to furnish information to any one desiring same during the night and to keep in touch with the different patrolmen.

City's Right to Award Hose Contracts Heard

Los Angeles, Cal.—Rights of the City Council to award contracts for fire hose regardless of the lowest bid received were taken up in Department 10 of the Superior Court in the suit of Emma L. Bennett and C. A. Bennett to restrain the Council from purchasing the hose recently selected. The plaintiffs claim the Los Angeles Rubber Company put in the lowest bid and therefore should have received the contract to supply the hose. The city urges its right to select with regard to quality as well as to price.

Street Department Horses for Fire Apparatus

Hudson, Mass.—By a new arrangement made last week between the Fire Engineers and the Commissioners of Public Works the town horses used by the street department will in the future answer all fire alarms when within certain prescribed limits, which extend about one mile from the central fire station. The new arrangement came about as the result of a misunderstanding at a recent fire, when a mill was partially destroyed, and the street department horses, which were at the town stable at the central station, were not allowed to be used on the hook and ladder truck. As a result the truck remained at the station during the fire. A session between the two boards resulted in the establishment of fire bounds.

Satisfactory Test of Hose

Paterson, N. J.—The following tests of 10 lengths selected from a lot recently purchased were made last week. One length was taken from each of 10 boxes and the total number of feet tested was 500 of the 5,000 feet delivered. The tests resulted as follows:

Lengths. Tested.	Weight. and Inches.	Stretch. Feet	Expansion. Inches.
First	63 lbs.	3.7	1-32
Second	63 lbs.	3.2	1-64
Third	64 lbs.	4.3	1-64
Fourth	62 lbs.	3.7	1-64
Fifth	62 lbs.	3.2	*1-64
Sixth	61 lbs.	4.8	1-64
Seventh	62 lbs.	4	1-64
Eighth	63 lbs.	3.4	1-64
Ninth	61 lbs.	4.6	1-32
Tenth	62 lbs.	3.9	1-32

*Decrease.

New Auto Patrol in Service

Philadelphia, Pa.—The new auto patrol for the Eighth police district has been put in service and within a short time several successful runs were made. This makes the third auto patrol now in service, the other districts having one being the Ninth and the Nineteenth. The idea of the police officials is to eventually reduce the number of patrol wagons and make arrangements so that each auto patrol will be utilized for at least three districts.

Signal Boxes for Use of the Police

Saginaw, Mich.—Some months ago, after securing the necessary appropriation from the Board of Estimates, Saginaw's Police Commissioners arranged for a service of 15 electric alarm and telephone patrol boxes from the Western Electric Light Company. The points at which the boxes are to be placed were also selected after a personal tour of the city by the Police Board.

All the machines have now arrived, and the Michigan State Telephone Company, which has the work in hand, will begin installation at once. Each box carries a red flash light and telephone, the combination being about as large as an ordinary fire alarm box. Headquarters has a switchboard by means of which it will be in constant touch with the patrol boxes and able to call up a patrolman on beat at any time, the patrolman also being able to call up headquarters and thus facilitating business. The switch board wires are connected with the Michigan State Telephone trunk, completing the service.

Parties on Post Cost Day's Pay

New York, N. Y.—A damper was placed on talkative spirits in the Police Department when Trial Commissioner Reynolds, presiding in Brooklyn, fined several policemen for social tendencies that kept them too long in one place while on patrol. The day will go down in department history as "silence is golden" day. The policemen facing charges numbered about ten. It was asserted by the complainants, who were all lieutenants, that they had found the men talking on street corners when they should have been patrolling their posts, and that the time consumed in their conversations varied from five to eighteen minutes. Fines of one day's pay each were imposed.

GOVERNMENT AND FINANCE**Commission Form of Government Adopted**

Modesto, Cal.—The commission form of government was adopted Sept. 15 by a vote of the citizens of Modesto. The administration will be in the hands of five elective officers who will appoint all employees of their several departments. The newly adopted charter also provides for the recall and the initiative and referendum.

City Apologizes to Socialist

Toledo, O.—Instant dismissal from the Toledo police force is to follow interference by any officer with any one who is making a speech in Toledo, no matter the time or place or crowd. Mayor Whitlock directed Safety Director J. J. Mooney to promulgate these orders. Coincidental with the mailing of this letter went another one to William Patterson, a Socialist, carrying with it the official apology of the city through the Mayor because of the indignity heaped upon him through his arrest by an officer of the force while speaking before a crowd in Summit street, blocking the sidewalk.

Bureau of Costs Suggested

Pittsburg, Pa.—Mayor Magee wants to save money for the city. Through inadequate co-operation among the various bureaus money has been wasted. The Mayor thinks that the establishment of a bureau of costs, similar in operation to the Commission of Accounts in New York, would help considerably. Snow cleaning offered an excellent illustration, the Mayor said, to show how cost of operation is often unnecessarily large. When there has been a particularly heavy fall of snow it is often necessary for the Bureau of Highways and Sewers to hire extra wagons to supplement those owned by the city. If this bureau were in closer touch with other city bureaus it could procure the services of vehicles controlled by other departments instead of incurring the extra expense of hiring more wagons. Such a bureau as the Mayor has in mind would, he believes, effect a sort of centralization that would bring together the forces of the various bureaus for the good of all.

The Bureau of Costs, which would be in the Mayor's office, under his supervision, would investigate the manner in which all the money is spent that is paid out by the city for operating expenses and the like. A plan could be devised which would not only bring into closer relation the various departments, but raise the standard of economic operation as well. In a short time the Mayor expects to send a message to Councils advising the creation of a bureau of costs. Later an ordinance will be introduced asking authority for its creation. The Mayor said he had talked the project over with Comptroller Morrow, and that the Comptroller thinks well of the idea. Mayor Magee said that the Bureau of Supplies, a comparatively new organization, has saved about \$100,000 in the first six months of its operation. It was organized, he said, with the purpose of saving money in the purchase of supplies for the various departments. The proposed new bureau, among other things, would have charge of the drawing up of annual expenditure estimates of the departments. It would be composed of expert accountants. This would have a good influence on budget making.

STREET CLEANING AND REFUSE DISPOSAL**To Prevent Dropping of Dirt on Streets**

St. Joseph, Mo.—An ordinance regulating the hauling of dirt will provide that in order to haul loose dirt through the streets a permit from the Board of Public Works must be first secured. The request for a permit must be accompanied by a deposit of \$10. In addition the wagons used for dirt hauling must be so constructed that they will not leave on the streets behind them a trail of loose dirt. Every 24 hours any such dirt allowed to dribble out onto the street must be cleaned up. In the event that such clean-up is not made the Board will have the authority to expend the \$10 deposit for such purpose. It will also be empowered to revoke the hauling permit and also to cause arrests for failure to observe the provisions of the ordinance. The ordinance is modeled on the Omaha law in this regard.

Capacity of Crematory Is Taxed

Youngstown, O.—The crematory, which was supposed to have a capacity of 30 tons per hour, now, according to Service Director Duesing, only burns 20 tons, 17 tons of garbage and three tons of refuse.

Employees at the plant say they do not get a chance to allow the furnaces to cool sufficiently to repair them properly. The brick work, it is claimed, is in bad shape, which interferes with the draft. The flame in the furnaces should extend back to the first holes, while they barely reach to the first doors, caused by the loose lying brick which prevents proper suction. Another source of trouble to the furnace men is the glass and cans thrown in the garbage. The melting glass flows over the surface and makes large clinkers which stop up and damage the grate bars. The crematory was originally designed for adding on more furnaces on the east side, and the stack was built in proportion to take care of the new furnaces if installed. There is plenty of room on the one side for more furnaces, and it is said that this would be a way out of the difficulty for the present at least.

New Haven's New Garbage Regulation

New Haven, Conn.—The ordinance dealing with the collection of garbage is being revised. The following is the proposed section containing a statement of what is required of the property owners:

Every owner of a house or other building in New Haven, or his agent or the person in charge thereof, shall provide and maintain at all times in a location convenient and accessible to all the tenants, and for their exclusive use, separate receptacles for (a) ashes and incombustible rubbish; (b) garbage; and (c) combustible rubbish. Receptacles for ashes shall be of metal or be lined with metal if kept within ten feet of any building; receptacles for garbage shall be of metal, be water-tight, and shall be kept covered with a close-fitting cover to exclude flies and prevent the escape of offensive odors. Receptacles for combustible rubbish shall be of fireproof material if kept within or near a wooden building. Combustible rubbish, however, may be tied into compact bundles if not stored near combustible material. All receptacles shall be kept clean, sanitary and free from offensive odors. They shall be of sufficient size and number to accommodate all users for 72 hours. Not more than 100 pounds of ashes, garbage or rubbish shall be placed in one portable receptacle and no portable receptacle shall be filled within four inches of the top. The neglect of such owner, agent or person having charge of a house to provide suitable receptacles for 48 hours after notice shall be given to him by the superintendent of scavengry to provide such receptacle shall be punishable by a fine not to exceed five dollars. Each day's failure to provide such receptacles after said 48 hours shall constitute a separate offence.

On collection days the receptacles shall be placed in an accessible place for the contractor who shall have license to enter upon the premises and remove the same. It shall be the duty of the owner or his agent to see that refuse is properly separated. If anything but garbage is put into the garbage receptacles the city will not collect or remove the same, and the owner shall remove it forthwith upon notice from the superintendent of scavengry.

Cleaning City Under Financial Handicap

New Albany, Ind.—The removal of garbage and the cleaning of streets is a serious problem with the city authorities. On account of the lack of funds the city has only six teams employed in the work. Two of these are used for removing slop, two for removing ashes and other litter, and two for removing dirt scraped from the streets. There are seven miles of improved streets in the city, and it is almost a physical impossibility to do the work with this limited equipment. Superintendent James Flynn, who has charge of this work, say he is doing the very best he can under the circumstances, and Mayor Greene hopes when the appropriations for next year are made a more liberal allowance will be made for street cleaning and garbage removal. The Board of Works and Finance Committee have not yet made the appropriations, but will do so this week.

Stable Crematories a Nuisance

Portland, Ore.—Private garbage crematories in several stables, in which the stable refuse is burned, are objectionable to residents in the vicinity on account of the obnoxious odors. Numerous complaints have been received at the City Health Office, and City Health Officer Wheeler, after an investigation, has ordered the conditions remedied or the incinerators discontinued. Dr. Wheeler said he had recommended that the smokestacks on the furnaces be extended to a greater height, which would produce greater draught and thus make combustion of the garbage more complete and at the same time carry the fumes above the neighborhood. If this does not give the desired relief, he said, the private garbage crematories must cease operations.

Street Cleaning Department Cost Less

Kansas City, Mo.—In response to the Mayor's order to several of the city departments to reduce expenses, figures were presented by W. C. Weaver, Superintendent of Street Cleaning, to show what that department has done from May 1 to September 1, compared with the same period under the preceding administration. Last year the expenditure for material amounted to \$11,895. This year that expense was \$1,760, and of the amount \$5,000 was to pay bills left over by the former management. This year the expenditure for labor was \$5,318 less than for the same period last year, when there was no weed cutting and no spring cleanup. This year \$13,000 was expended on a spring cleanup and \$4,627 to cut the weeds.

To Lay Dust About Hospitals

Trenton, N. J.—Street Commissioner Burk went to Princeton last week to see the operation of the automobile oil sprinkler that is keeping down the dust in the college town. Commissioner Burk was much impressed with the work of the sprinkler and will ask the street committee of Common Council to request its use on Brunswick and Hamilton avenues in this city. The sections Commissioner Burk is particularly anxious about are those in which St. Francis and McKinley hospitals are located. The roads are macadamized and, when the wind blows, clouds of dust are driven into the rooms and wards where the patients are lying. "Give the sick the first benefits," said Mr. Burk, "and if the experiment is satisfactory then extend the service in other parts of the city."

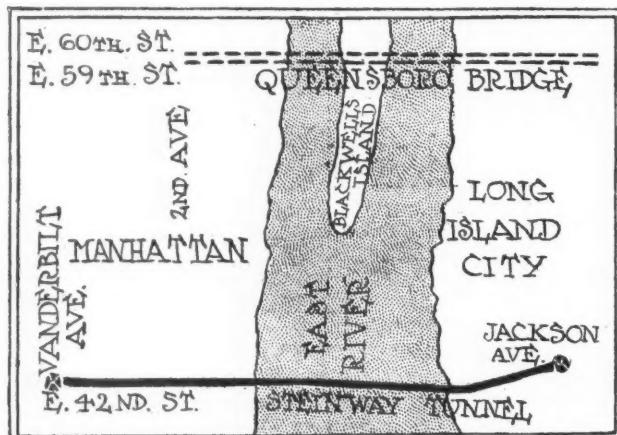
Topeka Garbage Plant in Operation

Topeka, Kan.—Fires in the new garbage crematory were started Sept. 21. More than 30 tons were burned on the first day. The plant will be run for 30 days to test its capacity.

RAPID TRANSIT

May Open Steinway Tunnel

New York, N. Y.—The Public Service Commission has decided to give new consideration to the proposal made by the Interborough Company to sell the city the Steinway tunnel. This tunnel from Long Island City to Forty-second Street in this borough has been finished for more than two years, but no attempt has been made to make use of it be-



cause the right of the Interborough Company to run cars through it has been questioned by the city's legal authorities. Under the term of this compromise the company would be allowed to add an additional track to the three elevated roads in Second, Third and Ninth avenues and to have the operating privileges of the Steinway tunnel, but the city is to obtain the tunnel on condition that it will pay only the amount that is needed to complete it, an amount estimated at \$1,500,000.

To Finish Subway Loop

New York, N. Y.—The Public Service Commission has sent to the Board of Estimate a proposed agreement with the Bradley Contracting Company in regard to section 9-0-1 of the bridge subway loop. The city contracted with this concern in 1907 to construct this section for \$998,328. In May, 1908, the contractor was directed to suspend work so that work on the foundation of the new Municipal Building could go on. This work has advanced far enough to permit the resumption of work on the subway loop.

The Commission declares that two courses are open; either to cancel the Bradley contract and advertise again or to compromise. The Commission recommends the latter. If this is done the contracting firm agrees to accept \$275,635.62 for its claims and \$1,150,000 for the completion of the work.

Finds City Ferry Graft

New York, N. Y.—After privately examining twenty-six ticket sellers and ticket choppers attached to this city's

municipal ferries at Pier A, Deputy Commissioner Cresson announced that he had found evidence of "systematic irregularities" in the sale of municipal ferry tickets. Mr. Cresson would not say what evidence had been brought out at the hearing. Neither would he give out the names of the twenty-six men examined. It is said that one of the irregularities in the municipal ferry ticket sales discovered by Deputy Commissioner Cresson consisted in the ferry ticket choppers fishing the tickets out of the boxes at the ferry entrances with wire when the ferryhouses were practically deserted and in giving them back to the ticket agents who sold them over again and divided the proceeds.

Prefers Subways on Side Streets

Cleveland, O.—Public Service Director Lea believes that any new subway grant that the city makes should bar main thoroughfares from the route of the subway through the city. "I do not believe that they should go under such streets as Euclid and Superior," he said. "It would work havoc with the city's business while the tube was being constructed. The same difficulty was experienced in New York. The city should only allow the side streets to be used."

MISCELLANEOUS

Municipally Owned College

Milwaukee, Wis.—The beginning of a municipally owned and conducted college is the description given the new Institute of Municipal and Social Service, which will open in the Milwaukee City Hall on October 27, when Mayor Brand Whitlock, of Toledo, will be one of the speakers and possibly Mayor Gaynor, of New York, another. A resolution was introduced in the Common Council last week authorizing the City Clerk to offer the institute the use of such space in the City Hall as might be necessary for the work. The new institute is a branch of the university extension work.

Some Details of Portland City Plans

Portland, Ore.—Acting upon the first definite plan for commencing work in beautifying Portland, Civic Architect E. H. Bennett is in conference with Dr. J. R. Witherbee and his associated workers. At this meeting the Chicago expert was presenting details for the Union Depot and bridge arrangement, which, if accepted, will be adopted by Portland and submitted to the railways affected to determine to what extent they care to enter into the scheme. In addition to these details, Mr. Bennett also will submit three or four other important studies for approval. One of these is with respect to the widening of Burnside street, to secure the East-West avenue contemplated. Another is for treatment of the waterfront, which follows closely upon the depot arrangement and bridge problems. The third is with respect to certain centers, which shall be the nucleus for development of given features of city life. The civic centers have resolved themselves into three general propositions. For the transportation center it is only natural that the Union Depot should be the dominating point. Location of the post office, custom house and kindred institutions near will serve the public most in bringing all transportation agencies in close and intimate relationship. This center would be largely provided for in the detailed plans which will be submitted as the first step in the general scheme of municipal improvements. An administrative center, embracing court houses and city and county offices, with perhaps another distinct center which unquestionably will be established around the present City Hall and County Court-house edifices. An athletic center for recreation and amusements is expected to be founded around the vicinity of Multnomah Field. This admirable site suggests opportunities of a remarkable character, and it is expected that the final treatment of this problem will reveal beautiful possibilities, such as perhaps no other Western city possesses. In a general way, these three center studies will be put before Portland business men on this trip of Mr. Bennett, and such as meet approval will be elaborated upon in the plans to be prepared in the coming months.

Standard 100-Foot Course

Wilmington, Del.—The city engineering department is at present installing on the reservoir embankment at Tenth and Franklin streets a standard course exactly 100 feet in length, to the hundredth part of an inch. This will be used for testing the accuracy of tapes now in use by the department and all new tapes that are purchased. This is a device that has long been needed, as it is absolutely essential for the protection of property holders that the tapes used by the department be absolutely accurate. Heretofore there was no adequate means of testing tapes for probable error. The course consists of two end stones 12 inches square and $3\frac{1}{2}$ feet in length, set in a bed of concrete 4 feet square. These stones are set approximately 100 feet apart. Four smaller supporting stones for the tape, at intervals of 20 feet, are set between the two end stones. The top surface of all are exactly on a level. Flat brass plugs in the end stones are set so that their centers are approximately 100 feet apart. The finest of knife scratches will be marked on these surfaces indicating the exact 100 feet, as measured by a tape that the department last week sent to the Bureau of Standards, Department of Commerce and Labor, at Washington. Suitable frames are being arranged for convenience in testing, with equal expediency, tapes of various makes. Spring balances are used for determining the proper tension of the tape and corrections for temperature are made from reading of temperature at three different points along the course. That such a standard course is necessary would seem to be indicated from the fact that the tape sent to Washington to be standardized was about one-thirty-second of an inch out. Permission was secured from the Water Department to place the course on the reservoir property, and the location along the high wall at Tenth and Franklin streets was selected because of protection from wind. The standard course will be completed in a few days.

Oakland Passes Water Front Franchise

Oakland, Cal.—The City Council has passed to print an ordinance granting to the Southern Pacific Company a fifty-year franchise on the western water front, thus ending, for the time being, a fight which various civic organizations of the city have been waging against the legislative body to prevent it from granting the privilege. The resolution to grant the franchise was introduced two months ago. The following amendments have been made to the original document: The insertion of a reversion clause by which the moles, docks and other permanent improvements of the company became the absolute property of the city at the termination of the franchise; a clause which provides for the acquiring of all the company's superstructures by the city upon the expiration of the leasehold upon payment by the city to the Southern Pacific of a sum to be fixed by the appraisers.

Savannah Appropriates \$10,000 for Publicity

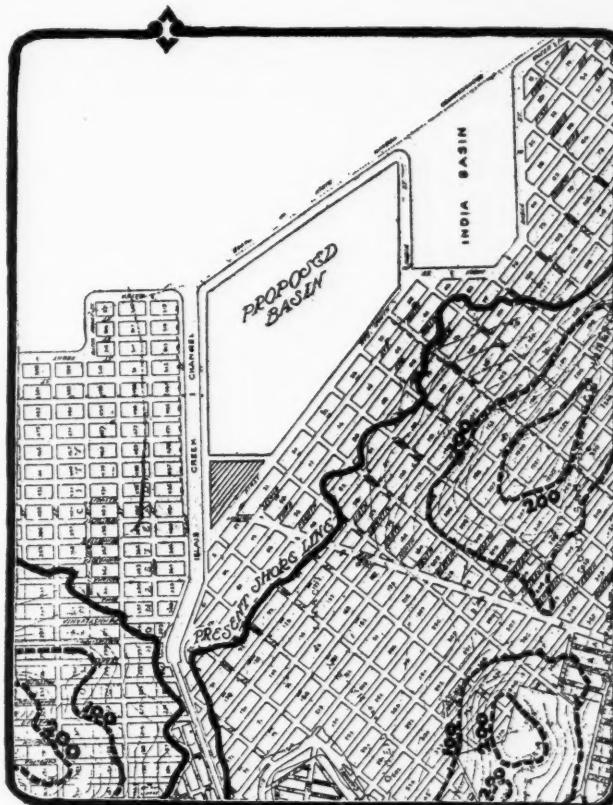
Savannah, Ga.—The city of Savannah and the Chamber of Commerce have practically secured the \$20,000 fund to be used in advertising the city of Savannah and its resources and advantages. The city gives \$10,000 of this amount and the citizens of Savannah the balance. There was a meeting of the directors of the Chamber of Commerce last week at which it was announced that practically all of the money had been subscribed.

To Make Municipal Automobile Rides Joyless

Oakland, Cal.—Proposing that a city garage be built where all of the automobiles of the city should be kept and repaired and a close watch be maintained to see that the machines belonging to the city be not used for private purposes, Councilman Oliver Ellsworth last week stated before the finance committee that the automobiles of the city were being largely used for midnight joy rides and that this practice has become a very general one among city employees. "Why," said Ellsworth, "you can go to San Jose any day or night and see half of the automobiles of the city lined up in that city and gay parties of the friends of city of Oakland employees speeding to and fro in any of the towns between here and that place. I would like to see a city garage where all of the machines will be kept and repaired when necessary. I think that this will do away with this practice and will also save the city money."

Proposed Harbor Improvement

San Francisco, Cal.—The issue of \$1,000,000 bonds, for acquiring 63 blocks of land between Islais Creek and the site of India basin, is being discussed. As shown in the illustration, the site of the proposed Islais Creek tidal basin is surrounded by marsh lands, which could be advan-



LAND RECLAMATION AND HARBOR IMPROVEMENT

tageously filled in connection with the dredging of the basin, and the present shore line is several blocks west of the land which it is proposed that the State shall condemn. For a distance of between one and two miles there is no elevation greater than 250 feet, and the surrounding blocks are generally level and well adapted for manufacturing and lumber yard sites.

St. Paul's City Plans

St. Paul, Minn.—Mayor Keller will lend his support to the movement for a comprehensive civic center plan for St. Paul. He is in accord with the resolution to be introduced to the Board of Aldermen by Alderman J. C. Otis, providing for a commission to take up the work of securing a comprehensive city scheme at once. The scheme which the commission will work out will include the grouping of municipal and other public buildings, the preparation of plans for a parkway system and the location of public playgrounds. Alderman Otis's resolution will provide for a commission to consist of representatives from both bodies of the Common Council and five other citizens. The Mayor will be a member ex officio. It is believed the commission, if named, will take up the capitol approach plan suggested by C. W. Ames and the comprehensive parkway system for which A. B. Stickney of the park board has been working. The committee of 100 citizens which may be selected from the civic, fraternal and commercial organizations of St. Paul, as a result of the movement inaugurated by Mr. Stickney, will probably aid the city plan commission with suggestions for a parkway scheme. It is said a number of women's organizations in St. Paul have expressed a willingness to co-operate with such a commission as the Otis resolution contemplates. If the appointment of the commission is authorized it will be the first time that the municipality has taken such a step. The municipal art commission's plans embodied some of the schemes contemplated for the commission, but it is said that this commission did not obtain the necessary co-operation to put through its projects.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Ruling of Interest to Municipalities

Paupers—Management—Claim Against City

Onondaga County v. City of Amsterdam.—Amsterdam City Charter conferred on the city's Overseer of the Poor exclusive care of the city's poor, with the same general duties and liabilities as an Overseer of the Poor of a Town, he being required to report to the Common Council in detail all appropriations, expenditures, temporary relief and allowances made by him for each preceding month, and being authorized to receive and disburse moneys and to determine the question of liability for a payment of claims for support. Laws 1909 provide that on the service of notice, by the Superintendent of the Poor of a County, that a poor person having a pauper's residence in a city has strayed or come into the County needing assistance, the Overseer of the Poor of the City may remove the poor person to his city and support her, or within 30 days notify the County Superintendent denying liability, and section 54 provides that on the service of such notice of denial, the County Superintendent within three months shall commence an action against the city for the expenses of the support of the poor person, or in case of failure to do so be precluded from all claim against the city. Held that, on the denial of liability by the city of Amsterdam to support a pauper having a residence therein, pursuant to a notice of the County Superintendent of the Poor of Onondaga County, the county was not required as a condition precedent to its right to recover for relief furnished to such pauper to present a claim therefor to the City Council, under Amsterdam City Charter, requiring that all claims against the city shall be so presented and referred before suit thereon.—New York Supreme Court, 124 N. Y. S., 558.

Damage by Surface Waters—Liability

Kurle v. Mayor, etc., of Baltimore.—Private persons graded and paved a private street and thereby turned the water on a public street in such quantities as to overflow the property of an individual. It was not shown that the city had accepted the private street. Held, that the city was not liable merely because it did not grade, pave, and place gutters in the public street, though the parties in grading and paving the private street removed a barrier which had protected the property of the individual. Where, in an action against a city for its failure to construct a sewer of sufficient size to carry off surface water, the evidence showed that surface waters overflowed plaintiff's property, and that part of the water flowed on the property because private persons had graded and paved a street which the city had not accepted, the recovery must be limited to such injuries as arose from a cause for which the city was responsible.—Court of Appeals of Maryland, 77 A. R., 373.

Injuries—Claims—Verification not Waived

Cotriss v. Village of Medina.—Under Medina Charter requiring a verified statement of claim against a village for injury caused by the defective condition of a street or other public way to be presented before suing, verification is essential to a valid claim, though the village be not prejudiced by no verification. Under such charter and laws a retention by the village trustees of an unverified statement is no waiver of verification.—New York Supreme Court, 124 N. Y. S., 507.

Improvement—Breach of Contract—City's Right to Recover

City of St. Louis v. Anderson et al.—A city which has sustained no loss cannot recover on a sewer contractor's bond the excess it is compelled to pay another contractor in special tax bills on the first contractor's failure to perform his contract, regardless of whether it styles itself trustee for the special taxpayers injured.—Supreme Court of Missouri, 129 S. W. R., 528.

Street Improvement—Conformity to Resolution

City of Poplar Bluff v. Bacon et ux.—A tax bill for macadam six inches deep is void where the initial resolution and proceedings had until expiration of the time for remonstrance against the improvement provided for four inches.—Springfield Court of Appeals, Missouri, 129 S. W. R., 466.

Laying Water Mains—Injury to Trees

St. Mary of the Angels Church v. Barrows et al., Water Commissioners—The rights of the city in making authorized public improvements in the streets with proper care and skill are paramount to the interest of an abutting owner in trees planted in the streets, even though such abutter owns the fee of the street, and although the trees may be injured, and such injury might be avoided by the adoption of a different plan; the resulting damages being *damnum absque injuria*. Under Olean City Charter, providing that the Water Commissioner shall have the power to lay water mains through the streets, such commissioners could lay water mains in spite of injury to the trees, along a certain space between a street and the sidewalk, independently of any authority from the Common Council, according to the charter, providing that the Council cannot regulate such powers of the Commissioners as have been "specified by this act."—New York Supreme Court, 124 N. Y. S., 571.

Public Improvements—Legislative Control

City of Geneva v. Henson et al.—Where the health of the citizens of city and the benefit of the public demanded that a nuisance existing on land formerly a part of the bed of a navigable lake be abated, and the water had become useless for navigable purposes and was of no benefit to the state, the state had authority to transfer such land to the city and require it to convert it into a public park.—New York Supreme Court, 124 N. Y. S., 588.

Public Improvements—Means of Defraying Expenses

Kelly v. City of Waterbury—The Waterbury city charter prohibits a city or any department thereof from incurring any liability in excess of the appropriations made by the Board of Aldermen, and provides that no improvements shall be ordered until the funds have been appropriated for that purpose. Section 76 requires the publication of assessments for damages to property taken for public improvements to be made within a week after their entry on the records of the Board of Aldermen, and makes such assessments payable on the first week day after the last regular meeting of the Board of Finance following the publication of the assessments, and the charter requires the regular meeting of the Board of Finance to be held on the first Tuesday of each month. Proceedings for taking land for a street were finally acted upon by the Board of Aldermen on December 19, 1906, and approved by the Mayor on December 20th, at which time available appropriations had been exhausted, so that sufficient funds were not available to pay the damages, but sufficient appropriations had been made which would be available on January 1, 1909, and at all times since, and the damages were deposited with the City Treasurer in April, 1909, when the city entered upon the land condemned. Held, that the action of the city in ordering the improvements was not unlawful or void under sections 92 and 133, on the ground that no appropriations were then available to pay the damages; it being sufficient that funds had then been appropriated for that purpose which would be available on January 1, 1907.—Supreme Court of Errors of Connecticut, 76 A. R., 467.

Condemnation Proceedings—Damages—Benefits

Wolverton v. City of Seattle.—Where in certain condemnation proceedings for opening up a street the jury made an award for a part of property taken and found "no damages" for the other part, such finding, not necessarily implying that there either were or were not any benefits to the other part, did not estop the subsequent assessment of such part for benefits, and, therefore, on the hearing attacking such assessment, testimony showing the introduction of evidence in the condemnation proceedings to prove damages to the other part in excess of benefits was properly excluded.—Supreme Court of Washington, 110 P. R., 29.

Duties and Powers of Board of Health

Mayor and Common Council of City of Rahway et al. v. Board of Health of State of New Jersey et al.—Chapter 297 of the Laws of 1908 as amended by chapter 142 of the Laws of 1909, vesting the powers and duties of the State Sewerage Commission in the State Board of Health, does not have the effect of intermixing in the sewerage commission acts of 1899 and 1900 things that have no proper relation to those acts.—Supreme Court of New Jersey, 77 A. R., 86.

NEWS OF THE SOCIETIES

Massachusetts State Firemen's Association.—The thirty-first annual convention opened at Lincoln Hall, Lowell, September 21. The meeting was called to order by President Burton Steere, second assistant chief of the Springfield fire department, and Mayor Meehan was introduced, who made an address of welcome. In his presidential address, Chief Steere reviewed the condition of the association, which he said was more prosperous than ever before. During the past year the payment of weekly benefits to the children of deceased members who were killed in the performance of their duties was begun. Chief E. S. Hosmer, Lowell, read a report on the money expended and claims considered. Two hundred and thirty-seven claims were considered, 113 from call and 124 from permanent men. There are 3,700 members in the association.

On motion of A. Howard Fiske, of South Framingham, seconded by Capt. D. J. Hurley, of this city, it was voted that in the future all addresses to be delivered at future conventions be forwarded to the secretary of the association and that the latter see to it that the addresses be put in pamphlet form for the use of the delegates at the convention. A sub-committee appointed to draw up an amendment to the present law relating to the Firemen's Relief Fund reported the following section:

Such fund shall be used for the relief of firemen, whether members of said association or not, who may be injured in the performance of their duty at a fire or in going to or returning from the same and when engaged in company drills when such drills are ordered by the chief, acting chief or board of engineers of the fire department, or required by town or city ordinances, and for the relief of the widows and children of firemen killed in the performance of such duty in the manner and to the amount determined by a board of five persons, of whom three, not members of said association, shall be appointed by the governor in July of the year nineteen hundred and eleven, to serve one for three years, one for two years, and one for one year; and one shall be appointed in July of each year thereafter to serve for the full term of three years, and two shall be appointed by said association in such manner as it may from time to time determine.

Some of the interesting points brought out in the various papers submitted are as follows:

G. R. Bartlett, Plymouth, speaking of Motor Driven Fire Apparatus, said that the automobile pumping engine had made a very creditable showing and is being rapidly installed by many departments. Speaking of ladder trucks he said the requirements were a low center of gravity and so constructed as to steer by the whole four wheels and dispense with the tillerman. Should require the services of but one man to raise it to any height and be held there, and should be capable of being lowered as quickly as raised. The operator, by standing at the point of control, should be able to control the main ladder, the fly ladder and direction of movement of the turntable at will, and also the necessary mechanism to hoist hose to the ladder top. He suggested the use of new metals possessing non-tarnishing qualities in the place of brass, and light metals said to be as strong as steel.

Thomas W. Roose, of Engine 6, Boston, advocated the use of the smoke mask. He divided these masks into the following classes: First, those through which the external air is supplied through hose to the point desired. Second, those self-contained, such as the oxygen helmet; or that to which a tank is attached containing compressed air. Third, those designed to filter what little air may be contained in the fumes of smoke. The last class had been tried most by fire departments and met with comparatively little success. Of the second class he preferred the oxygen helmet. He thought smoke masks should be given to volunteers who would in time acquire skill in their use.

Engineer Arthur R. Bains, Lowell, speaking on Fireproof Materials, gave most of his attention to reinforced concrete. He said that the absorption of heat by the water of crystallization of cement and consequent cooling effect on the fire was an important factor in giving concrete its high value as a fire-proofing material. He said that only under most severe conditions is cement injured to a depth of two inches, and on flat walls and floor slabs one inch is seldom exceeded.

Capt. A. H. Strong, Springfield, advocated the adoption of a distinctive horn or siren with a discordant sound in order to notify pedestrians, drivers of wagons and automobiles that a piece of fire apparatus was approaching. The City of Springfield passed a law to that effect several years ago which prohibits the use of a horn similar to that used by the fire department.

Capt. E. D. Carey, Lawrence, spoke on the hours of labor for firemen. He presented a careful detailed statement which appeared to show that a 12-hour system would cost no more than the present system in force in his own city, where there are call and permanent men.

Chief A. Howard Fiske, of South Framingham, spoke of the high per capita cost of fire losses in this country as compared with the low losses in other countries. It costs \$4.50 for every man, woman and child in this country per year for fire losses, he said, while in European countries it costs but 19 cents.

The following officers were elected to serve during the coming year:

President—George L. Johnson, of Waltham.

First Vice-President—Lieut. J. W. Manley, of Brookline.

Second Vice-President—Capt. Charles D. Foley, of Lowell.

Secretary—D. Arthur Burt, of Taunton.

Treasurer—H. R. Williamson, of Worcester.

Honorary Vice-Presidents—Asst. Chief A. P. Gorman, of Gloucester; Charles A. Donohue, of Boston; Fred W. Paty, of Plymouth; Chief J. F. Hamilton, of Lawrence; ex-Chief G. A. Wilfrett, of Revere; George W. Stanley, of Beverly, and F. E. Chase, of Northampton.

Board of Directors—For three years—Capt. James F. McKissock, of Lowell, and Capt. J. F. McEnroe, of Springfield; Commission from Association of \$15,000 Firemen's Relief Fund, for two years—Chief W. B. Randlett, of Newton.

Sergeant-at-Arms—H. O. Whitmarsh, of Braintree.

Lawrence was chosen as the next meeting place.

Iowa League of Municipalities.—The annual convention was held in Waterloo, September 20-22. Mayor S. J. Bennett, Fort Dodge, called the convention to order. B. F. Swisher, formerly city attorney, Waterloo, delivered the address of welcome in behalf of Mayor Rector. Dr. Guilford H. Sumner, secretary of the State Board of Health, responded. Mayor Bennett read his annual address before showing the gain in membership of the association and what it is doing for the cities that have memberships. He said that the urban population of every city that is a member is greatly benefited by reason of the solving of problems that come up in every community with reference to public service corporations, etc., and that it behooves every city in the State to become an active member. Then followed Secretary Frank G. Pierce's annual report. His report, covering the year's work of the society, showed that the league is in a flourishing condition, and that bright prospects are ahead of the association. On the second day of the convention A. C. Meredith, Mayor of Newton, read a paper on telephone rates, which in view of the recent agitation over the State over telephone consolidation, shed new light on the situation. A very interesting discussion was then entered into by Hon. F. W. Linebaugh, water superintendent of Ames. Discussion on this paper was led by Hon. B. F. Stedman, superintendent of the Dubuque water works. The attorneys met in the office of Attorney Swisher and discussed several questions that had been submitted by the various city officials, through the question box, and prepared their answers to give in the general meeting. The accounting officers met with the Mayors and Councilmen in Elks' hall and the papers to be read before that body were read and discussed in open meeting. W. H. Stepanek, Commissioner of Accounts of Cedar Rapids, read a paper on "Needed Changes in the State Municipal Accounting Department," which enlisted considerable interest in the discussion following. A paper by Attorney B. F. Swisher, of Waterloo, on "What Sections of the Code Should Accounting Officers Know?" was read by one of the auditors. Dr. G. E. Decker, of Davenport, member of the State Board of Health, read a paper on "The Relation of the Medical Profession to the People in Regard to Public Health," that attacked the patent medicines and referred to the repeated and successful attempts to circumvent the enactment into law of measures designed for the protection of the public health. Several important measures were advocated at the morning session of the health officers' meeting. Dr. G. H. Sumner, Secretary of the State Board of Health, offered a suggestion that the convention take steps to secure the establishment of a department of hygiene for the State University. A committee composed of the executive committee and the secretary of the Board of Health will attempt to secure the passage of a law to this effect at the next session of the Legislature. Prof. A. T. Irvin, Ames College, read a paper on "Street Trees from the Landscape Gardner's Point of View." He said that the time to do effective work in tree planting was when a street is first laid out. Judging from the freedom of discussion indulged in by many officials following the paper by Mayor H. M. Sparboe, of Webster City, on "Municipal Ownership of Public Utilities," everybody was a municipi-

pal ownership advocate. Mayor Sparboe used the electric light plant and water works of Webster City as specific examples of the success possible for municipally owned utilities. Newton, Boone, Fairfield, Maquoketa and other cities own their light and water works plants, or one of the two, and from their statements all are proving wonderful successes.

C. P. Chase, civil engineer, of Clinton, read a very interesting and instructive paper before the delegates on "Sewage Disposal," and upon sewer construction in the cities of Iowa. He produced statistics showing how the cities are handling the question of carrying off their waste matter and protecting public health.

One of the interesting sights about the meeting place in the Elks' hall was the exhibit room, especially the exhibit sent by the City of Des Moines. This was in charge of Ray Floyd Weirick, city landscape architect. Several maps showing the business section of the city, the river front improvements that are being made and that are yet to be made, and the location of the various commercial and public buildings, important statistics of Des Moines, showing the various city improvements, and several graphophone records by prominent Des Moines citizens about the city and on the commission plan of city government. Cedar Rapids has presented a large map in colors, showing up the business center of the city, with especial emphasis on the island on which are located the city buildings. The river front commission map was also shown.

The following officers were elected: President, John R. Rector, Mayor of Waterloo; Secretary-Treasurer, Hon. Frank C. Pierce, editor of the *Midland Municipalities*, Marshalltown. Davenport was chosen as the next meeting place.

League of Michigan Municipalities.—The annual convention was held at Lansing, September 21-23. Mayor Bennett delivered the address of welcome and President Lawton T. Hemans responded. Mayor Bennett urged the delegates to make personal inspections of the various municipally owned utilities and city departments. He mentioned that Lansing had reached a form of government as near to the commission form without the adoption of a new charter similar to that of Des Moines and other cities. President Hemans spoke of the rapid growth of Michigan cities due to manufacturing and the consequent increase in the importance of municipal problems. Among the papers presented was one by Clarence A. Proctor on "Municipal Asphalt Pavement," in which he said that Detroit with an investment in plant of \$46,500 had in seven years saved the city \$173,000. Mayor Waltz, of Ann Arbor, spoke of the concrete paving in his city, and stated old pavements are being resurfaced with concrete for 78 cents per square yard. The pavement consists of a base of 5 inches of concrete and a surface coat of 2 inches, which is struck off with a template devised by City Engineer W. E. Grover. Before the concrete is thoroughly set a coating of hot coal tar is spread over it and sharp sand sprinkled over it. Horatio S. Earle spoke of good roads, pointing out what expenses were properly chargeable to the county and what ones to towns and cities. Mayor Jacob Martin, Monroe, spoke of the enforcement of State laws and city ordinances. He said that there

were fewer prosecutions for crimes said to arise from liquor traffic in Monroe than in similar cities in local option counties.

At the closing session Saginaw was chosen for the place for holding the convention in 1911 and the following officers were elected: President, Mayor William L. Walz, Ann Arbor; Vice-President, Mayor William Raths, Ludington; Secretary and Treasurer, E. R. Schreiber, Detroit; Executive Committee, Mayor John S. Bennett, Lansing; Mayor Jacob Martin, Monroe; Mayor E. G. Davids, Charlotte; Mayor H. E. Kidder, Ioania, and Mayor W. E. Brown, Manistee.

National Municipal League.—The league has established an annual prize of one hundred dollars, called the "William H. Baldwin Prize," to be given to the author of the best essay on a subject connected with municipal government. For the year 1910-1911 the competition will be limited to undergraduate students registered in a regular course in any college or university of the United States offering distinct instruction in municipal government. The prize will be awarded by judges selected by the executive committee of the league, and the name of the winner will be announced at the next following annual meeting. The executive committee of the league, acting in consultation with the "Committee on the Co-ordination of University and Collegiate Instruction in Municipal Government" and the judges of the 1910 prize, has selected as the topic for next year's competition the subject of "The Administration of the Police Department in Some City in the U. S. with a Population of Over 200,000." Each competitor is expected to select the city which is most accessible to him for research work, which is an absolute requirement in this competition. Each essay should contain a thorough exposition of the methods of organization and administration of the police department in the city which he has selected. In addition, each competitor will be expected to treat the subject (a) comparatively, with reference to approved police methods in this country and in Europe; (b) constructively, with a view to suggesting improved methods of police administration in the city he has chosen. The essays must not exceed 10,000 words, and must be typewritten and mailed, or delivered in duplicate to an express company, not later than March 15, 1911, addressed to Clinton Rogers Woodruff, Secretary of the National Municipal League, North American Building, Philadelphia, Pa., and marked "For the William H. Baldwin Prize." Competitors will mark each paper with a "nom-de-plume," and enclose in a sealed envelope the full name, address, class and college corresponding to such "nom-de-plume."

Kansas Volunteer Firemen's Association.—At the meeting, Eureka, September 24, the following officers were elected: Dr. Howard, Beloit, president; Charley Weiser, Eureka, first vice-president; Harry Helser, Seneca, second vice-president; George F. Mohrbacher, Marysville, treasurer, and K. D. Doyle, of Wamego, secretary. It was voted to hold the next meeting at Wamego.

Albany Society of Engineers.—The feature of the September meeting of the society, September 24, was a trolley trip to Stillwater. On the journey north stops were made at different places to inspect tower excavations, lock and guard gates and other engineering features along the barge canal.

Milwaukee Association for Public Play and Social Education.—At a meeting held in the public library and museum building, September 21, this society was organized. The constitution which was adopted recites in the preamble that "the organization is formed for the purpose of studying the problems of public recreation and promoting such action on the part of the City of Milwaukee as shall result in the provision of safe, adequate, well preserved playgrounds for all of the children of the city; the development of public means for awakening, conserving and organizing the latent musical and artistic talent of the city, for promoting the more general and fitting celebration of civic holidays and festivals, and such other municipal action along the lines of public recreation and education.

The following officers were elected: J. H. Puelicher, president; August S. Lindemann, first vice-president; the Rev. Holmes Whitmore, second vice-president; Duane Mowry, third vice-president; E. J. Ward, secretary; Helen Van Valkenburg, corresponding secretary; Charles W. Norris, treasurer.

Pacific Coast Gas Association.—About 100 delegates met at the eighteenth annual convention at Los Angeles September 20. The presidential address by W. B. Cline covered questions of manufacture, distribution, legislation and labor conditions. Among the papers read were the following: Progress in Oil Gas Manufacture; John A. Britton, secretary of the association, Relations with Employees; Sherwood Grover, Gas Plant Economics; The Oil Situation from the Gas Man's Viewpoint, by H. W. Burkhart; Suburban Distribution, L. H. Newbert; The Introduction of the Gas Furnace, by Charles F. Stamps, Jr.; Fire Insurance and Protection, by R. J. Cantrell. The following officers were chosen: Frank A. Leach, Jr., Oakland, president; William Baurhyte, Los Angeles, vice-president; John A. Britton, San Francisco, secretary-treasurer; Henry Bostwick, San Francisco, assistant secretary-treasurer; directors, H. B. Adams, Stockton; H. W. Burkhart, Los Angeles; E. C. Jones, San Francisco.

County and City Health Officers of Texas.—The convention was held at Houston September 26-28. The following program was carried out: The first meeting was held at the City Hall, in the Council Chamber, where addresses of welcome were made by Mayor H. B. Rice and Dr. John H. Foster. From there the visitors were taken to the city water works plant, where at 10:30 a. m. they listened to an address by Water Commissioner Robert L. Jones. Refreshments were served and an inspection made of the big Austin street sewer. At 2 p. m. a visit was made to the garbage disposal plant and crematory of the city, where an address was made by William Dulier, a local engineer, who is engaged in the construction of the Thompson crematory and disposal plants, and who explained the principles and workings of the plant. At 3 p. m. a visit was made to the filter beds, where Frank L. Dormant, chief consulting and construction engineer for the city, discussed this great work. Wednesday morning there was a boat ride down the ship channel to the battleground. At 2 o'clock they heard an address by Dr. George W. Larendon, City Health Officer, and a criticism of the new sanitary code by Dr. R. B. West, County Health Officer of Tarrant County.

League of Virginia Municipalities—The fifth annual convention will be held at Charlottesville, Va., October 6-7. The following program has been announced:

October 6, 1910, 7:30 p. m.—Address of Welcome, Hon. E. G. Haden, Mayor of Charlottesville; Dr. C. G. Maphis, Charlottesville. Response—Hon. H. H. Wayt, Mayor, Staunton. Municipal Government—Hon. John S. Patton, ex-Mayor, Charlottesville. Municipal Accounting—Mr. W. L. Craft, Auditor, Roanoke. Mistakes of American Cities—Dr. C. W. Kent, University of Virginia. The "General Manager Plan" for Cities and How It Succeeds—Mr. S. D. Timberlake, Jr., Staunton.

October 7, 10 a. m.—The Citizen's Duty in Municipal Government—Mr. Chas. E. Ashburner, General Manager, City of Staunton. The Fundamental Requisite—An Honest Ballot—Hon. Barton Myers, Norfolk. Why the Commission Plan Succeeds—Lieutenant C. P. Shaw, Norfolk. The Health Work of the State—Dr. Ennion G. Williams, Health Commissioner, Richmond. Municipal Taxation—Hon. Maryus Jones, Mayor, Newport News. Report of Committees and Election of Officers. Adjourn at 1 p. m. for luncheon at Odd Fellows' Hall, to which all delegates are invited. 2 p. m. A Well-Organized Health Department as a Municipal Asset—Kenneth Bradford, M.D., Health Officer, Staunton. The Diseases a Municipality Can Control and How to Do It—Roy K. Flannagan, M.D., Health Officer, Charlottesville. Closing Remarks—Hon. R. W. Holsinger, President of Council, Charlottesville.

Calendar of Meetings

October 5-7.

Oklahoma Cement Users' Association.—Annual Convention, Oklahoma City, Okla. E. A. Mossman, 4 Chamber of Commerce, Oklahoma.

October 10-11.

Massachusetts Police Association.—Annual Convention, Holyoke, Mass.

October 10-14.

American Street and Interurban Railway Association.—Annual Convention, Niagara Falls, Ontario.—H. C. Donecker, Secretary, 29 West 39th St., New York, N. Y.

October 11-16.

American Society of Municipal Improvements.—Seventeenth Annual Convention, Erie, Pa.—A. Prescott Folwell, Secretary, 239 W. 39th St., New York, N. Y.

October 19-21.

American Gas Institute.—Annual Meeting, New York City.—A. B. Beadle, Secretary, 29 W. 39th St., New York, N. Y.

October 20-21.

Ohio State Boards of Health.—Twelfth Annual Conference, Cincinnati, O.—Dr. C. O. Probst, Secretary, Columbus, O.

October 24.

Illuminating Engineering Society.—P. S. Millar, Secretary, 29 W. 39th St., New York, N. Y.

November 14-18.

National Municipal League.—Annual Meeting, Buffalo, N. Y.—Clinton Rogers Woodruff, Secretary, North American Building, Philadelphia, Pa.

November 17-19.

National Society for the Promotion of Industrial Education.—Annual Convention, Boston, Mass.—James C. Monaghan, Secretary, 20 West 44th St., New York, N. Y.

November 21-23.

City Commission Congress.—Meeting, Galveston, Tex.—R. E. L. Giles, Secretary, Galveston, Tex.

February 1-3.

Nebraska Cement Association.—Western Cement Exposition, Omaha, Neb.—Peter Palmer, Secretary, Oakland, Neb.

May 29.

American Water Works Association.—Annual Convention, Rochester, N. Y.—J. M. Diven, 14 George St., Charleston, S. C.

PERSONALS

ARMBRISTER, PHILIP M., Mayor of North Yakima, Wash., has resigned and gone to California on account of failing health; Councilman Fred Shaw is Acting Mayor.

BARKER, W. S., Lecompte, La., has been elected Town Marshal, vice S. A. Pittman, resigned.

BARNARD, GEORGE M., New Castle, Ind., has been elected Mayor by the City Council on the 108th ballot; he is a son of Congressman William O. Barnard.

CARTMELL, JOHN P., Mayor of Marysville, Ohio, fell dead at the Union County Fair last week; he was 53 years old.

CORCORAN, CORNELIUS J., City Clerk of Lawrence, Mass., for thirteen years, has resigned to become president of the newly incorporated Lawrence Trust Company and Assistant City Clerk Edward Wade has been promoted.

DALY, CHARLES DUDLEY, Boston, Mass., has been confirmed as Fire Commissioner of the city by the Civil Service Commission after a month's consideration; he was at one time captain of the Harvard football team and an army officer.

DAVIDSON, W. N., Chief of Police of Portsmouth, Ohio, has resigned after having been arrested and fined for bringing liquor into the city, which is local option territory, and treating his friends.

EMERSON, CHARLES A., JR., has resigned as division engineer in charge of the Baltimore Sewerage Commission to accept a position with the Pennsylvania State Board of Health.

FAHY, J. A., Rome, Ga., has been elected City Engineer by the Board of Public Works, with a salary of \$1,500 per annum.

GOOKEN, JAMES B., Assistant City Chemist of Chicago, Ill., has been discharged from the service on the charge of neglect of duty, preferred by Dr. W. A. Evans, City Health Commissioner.

GUY, DEWITT C., Police Chief of McCourt City, Miss., has been re-elected by the citizens.

HASKINS, W. A., Marcus, Wash., has been elected Mayor of the newly incorporated town.

HORTON, A. D., Boston, Mass., has been appointed as Supervising Engineer of the sewer system now under construction at North Pelham, N. Y.; he has been assistant to Harold B. Roberts, who resigned as stated two weeks ago.

JOHNSON, GEORGE A., New York, N. Y., has formed a partnership under the firm name of Johnson & Fuller with William B. Fuller. Offices have been engaged temporarily at 150 Nassau Street, New York, and the firm will act as specialists in all phases of water supply, water purification, sewerage and sewage and refuse disposal.

KENT, WALTER, City Electrician of Augusta, Ga., has resigned, and H. C. Britton has been appointed to the position.

KERNS, P., Hastings, Fla., has been elected Mayor over J. W. Sealey.

KLINE, JOHN P., Texarkana, Ark., has been elected Mayor over Foster Rogers, vice Robert L. Trigg, deceased.

LOGASA, CHARLES, Omaha, Neb., a member of the staff of the city engineer's office for the last 13 years, has resigned in order to accept a position at Panama.

MILLS, JASON, Inspector of Sewers of Brooklyn, N. Y., until two years ago, when he was retired, and prior to that time in charge of the sewers of the Borough of Manhattan, died last week, aged 89 years.

O'CONNOR, G. V., Mobile, Ala., has been elected Police Commissioner.

PHELPS, CHARLES E., Baltimore, Md., formerly subway engineer, has been appointed chief engineer of the Public Utilities Commission.

PIERCE, COL. SAMUEL C., Rochester, N. Y., has been named as a member of the Municipal Civil Service Commission by Mayor H. H. Edgerton, vice Major George J. Oakes, resigned.

RICE, GEORGE S., New York, N. Y., Engineer of Subway Construction, of the Public Service Commission for the First District of New York, has resigned in order to enter private practice. He was chief engineer of the former Rapid Transit Commission, which previous to the establishment of the Public Service Commission had charge of subway construction. Under his administration as chief engineer the extension of the subway under the East River to Brooklyn was completed and work started on the bridge loop subway.

RUCKER, DR. WILLIAM COLBY, Health Commissioner of Milwaukee, Wis., has resigned and will return to the U. S. Public Health and Marine Hospital Service, from which he secured a year's leave of absence to enter upon the office to which he was invited by Mayor Seidel when he assumed office.

SANBORN, GILBERT W., who was employed as an inspector on contract 15 of the Catskill aqueduct, near Gardiner, N. Y., was instantly killed on Sept. 22. His death was the result of a stab received by accident in his endeavor to protect one of the contractor's men from the attacks of a fellow workman.

SCHAFFER, CHARLES F., and J. D. Terrell, Mobile, Ala., have been elected members of the Board of Public Works.

STALLINGS, J. M., Chief of Police of Spring Hope, N. C., was shot by a negro whom he sought to arrest at his home for selling liquor, and died a few days later.

STETH, D. J., Chief of the Fire Department of Mt. Pleasant, Tex., has resigned owing to his removal to Dallas; Allen Duppell is the new Chief.

STEVENSON, DR. HERBERT E., Cloudcroft, N. M., becomes Mayor by election as President of the Board of Directors.

STUART, RUSSELL R., engineer in charge of the water supply for the barge canal of New York, has resigned to become assistant engineer of the Buffalo Dredging Company; he was City Engineer of Syracuse, N. Y., from 1896 to 1902 and some years ago was Democratic candidate for State Engineer and Surveyor.

TAYLOR, M. M., Director of Public Service of Newark, Ohio, has been dismissed by Mayor John Ankele, for gross neglect of duty.

VAN CLEVE, A. H., M. Am. Soc. C. E., of Niagara Falls, N. Y., has been appointed Chief Engineer of the city of London, Ontario.

WATERMAN, S. H., Mayor of Cumberland, Wis., for ten years, has resigned in order to devote his entire time to the cultivation of cranberries, as he owns one of the largest cranberry marshes and is one of the heaviest producers in the Northwest.

WEST, WILEY F., Atlanta, Ga., has been appointed manager of the St. Louis, Mo., branch of the Firestone Tire & Rubber Company.

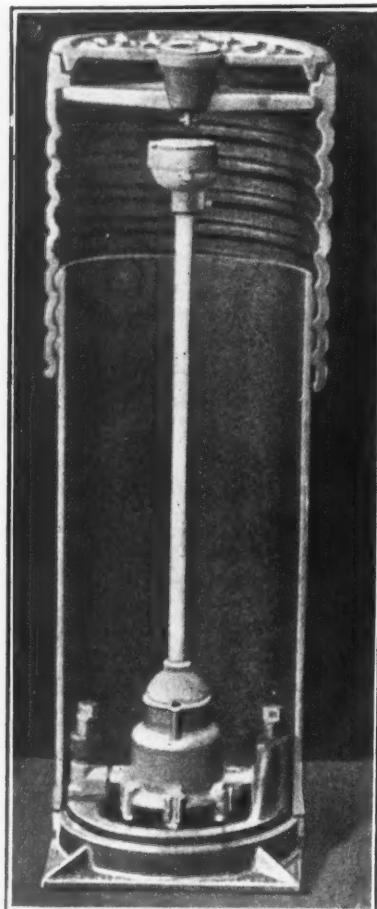
WHISKEMAN, JAMES P., New York, N. Y., Chief Engineer of the Bureau of Buildings, Borough of Manhattan, has resigned, effective Oct. 1, in order to go into the contracting business. He was appointed to the bureau in 1902 as assistant engineer.

YEAGER, J. A., Seminary, Mass., has been elected Mayor over J. W. Binns.

MUNICIPAL APPLIANCES

Meter Boxes

The Hersey Meter Box, Northern Pattern, made by the Hersey Mfg. Co., South Boston, Mass., consists of a heavy cast-iron screw top box a little larger than the meter. This fits a cast-iron base adapted to connect into the service pipe. When the base is connected into the pipe line and the box is put into place and adjusted to the right



HERSEY METER BOX

height and the trench filled up, it is ready for use. In putting the meter into place special connections are used which connect with the water-ways in the base and the meter is held firmly in place and in water-tight connection with the base by means of set screws which, when tightened up, leave the meter ready for use. By simply loosening the screws the meter can be removed. Extension dials can be used to good advantage.

The Southern Pattern consists of a light cast-iron box in two parts, which fits the cast-iron base described above, and which is connected in precisely the same way. It is adapted for use where the services are not very deep. Extension pieces can be used for varying the depth when it is necessary. Extension dials can be used or not as desired.

Both styles of boxes have a double cover, the air space between them serving as a non-conductor retains the warmth of the soil within the box. The lower section of the cover is also a protection from moisture. Means of removing the covers are provided through a small inner hand plate.

Gas Producer for Non-Bituminous Fuel

The Wile gas producer, designed to operate with a non-bituminous fuel, anthracite coal, coke or characol, made in units of from 35 to 300 horse power, is made by the Gas Machinery Company, Cleveland, O. The gas is formed by passing a supply of steam and air through the incandescent fuel bed. Producer gas for use in gas engines as well as for other purposes is cooled, cleaned and dried in scrubbing and purifying apparatus. When used in gas engines a much higher fuel efficiency is obtainable than with boilers and engines. The fuel cost per horse-power year of 3000 hours is estimated at \$6, with coal at \$4 per ton, as compared with \$24 for results obtained from boilers and Corliss steam engines. To state the case another way, producer gas power is claimed to be obtained from 1 pound of coal per horse-power hour, while in steam power a consumption of 4 pounds of coal is considered good for non-condensing engines.

Wile gas producers convert non-bituminous fuels into cool and clean producer gas. The necessary steam is generated in the vaporizer by the waste heat of the producer gases, making the producer self-contained; the producer does not require an independent boiler, nor is it dependent for steam upon the exhaust heat of a gas engine. The producer may be located any distance from the place where the gas is used. The necessary steam and air are drawn into the fuel bed by suction either of a gas engine or of an exhauster. Wile gas producers consist mainly of the following parts: Gas generator, steam vaporizer, water regulator and steam controller, hydraulic operating valve, draft pipe, scrubber, purifier, starting fan, connections and piping, gauges and appurtenances. To deliver producer gas under pressure an exhauster with regulating device may be fitted after the outlet of the dry purifier of the producer.

The general construction of the Wile producer is shown in the diagram. The dry purifier is on top of the wet scrubber, but in large installations the purifier is entirely independent of the scrubber and therefore more accessi-

ble. The gas made in the generator, which is supplied with steam raised in the vaporizer and controlled by the water regulator, passes through a hydraulic operating valve into the wet scrubber; after being scrubbed with water the gas is dry cleaned in a purifier and is then ready for use in a producer gas engine, or for fuel purposes.

The heavy steel shell of the gas generator contains a fire brick lining, backed by a thick layer of non-conducting material to minimize radiation from the incandescent fuel, which is supported on a cast-iron shakable grate. Upper doors are provided in the shell for clinkering, and lower doors for cleaning the fuel bed and for removal of ashes; side and top poke holes facilitate breaking up of clinker. Charging hopper, of the double shutter type, does not permit leakage of air into the gas generator while charging fuel. These features enable the generator to be operated continuously. Connections for the proper supply of air and steam are made underneath the grate. Air supplied to the fuel bed raises its temperature; too much air and too little steam drawn into the fuel increase the temperature of the fire and consequently cause the ash to fuse into clinkers. Proper regulation of air and steam admitted underneath the grate is therefore necessary to maintain a uniform temperature of the fire and this is accomplished by the water regulator and steam controller.

The producer gas, after having been considerably cooled in the steam vaporizer, is washed in the lower compartment of the scrubber and is further cooled and freed from dirty particles in the main part, which is filled with coke resting on wooden trays. The scrubber filling of coke is constantly washed by sprays of water; dirty water may be used, as sprayers do not clog. Scrubber is provided with manhole for ready access and removal of scrubber filling, and with handhole for inspection and cleaning of washing compartment.

The final cleaning takes place in the dry purifier, which is filled with excelsior and shavings; suspended water particles carried along from the wet scrubber are here separated from the gas. The purifier is provided with inspection door and the cover is removable for refilling of purifying material.

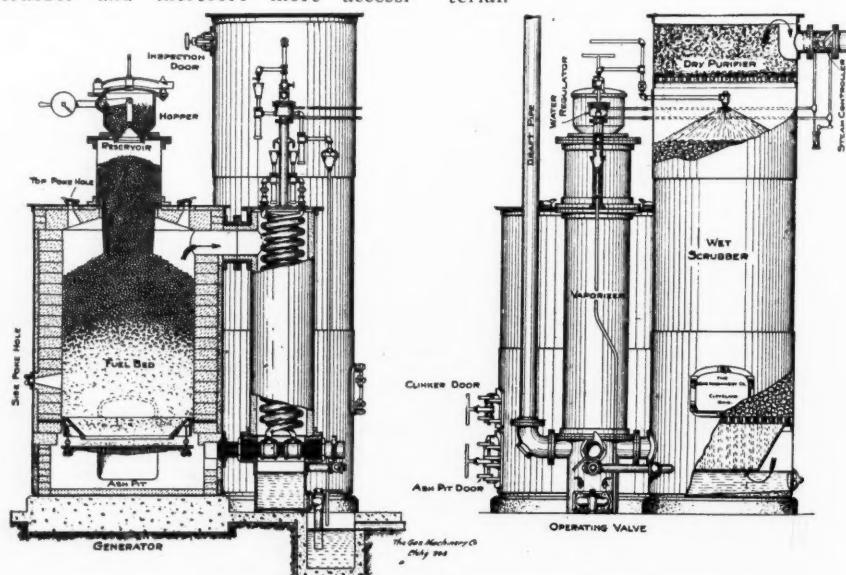
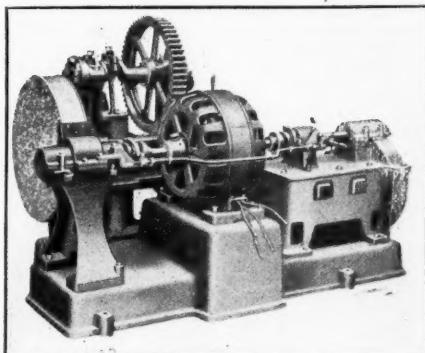


DIAGRAM OF WILE GAS PRODUCER FROM NON-BITUMINOUS FUEL

Air Compressor and Pump

NATIONAL portable air compressor outfits are adapted for use in mercantile establishments, mines, quarries, manufacturing plants and in construction work, where the available floor space is limited, or the nature of the work requires that a supply of com-



MOTOR DRIVEN AIR COMPRESSOR AND PUMP

pressed air be delivered in different places and under constantly changing conditions. They possess the advantage of being easily hauled from place to place and do not necessitate the construction and maintenance of extensive piping, with consequent wasteful leakage and incidental annoyances. The portable outfit is available for instant service, and can be completely transported and operated just where it is wanted, with the result that the friction of the air in passing through a long line of piping is greatly lessened, and the efficiency of the outfit increased to a marked degree. These portable outfits can be equipped with the same type of motor compressor and controlled in the same manner as any of the National stationary compressors. The outfit is made by the National Brake and Electric Company, Milwaukee, Wis.

Hose Tester

A SIMPLE and convenient device for testing fire hose is made by the Racine Test Pump Company, Racine, Wis. The device consists of a fire hydrant reducer, six feet of three-quarter-inch hose, a hose cap and vent and six-hundred-pound gage and a hand pump. The operation is so simple that it hardly needs description, a glance at the cut being sufficient to explain it. The point is that the apparatus makes the process of hose testing so easy that it is not apt to be neglected. Neglect in testing hose may be a very serious mat-

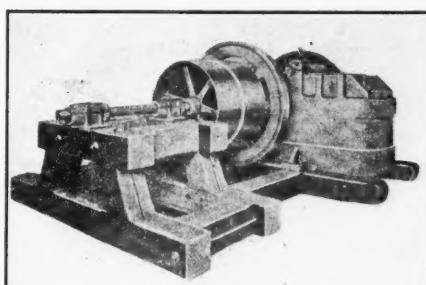
ter at a fire when the delay caused by the bursting of a single length may allow the fire to gain dangerous headway.

Smoke Consumer

A NEW system of equipment for steam boilers designed to overcome the smoke nuisance and at the same time effect economy is being introduced by the Parsons Engineering Company, Equitable Building, Wilmington, Del. The company states that in most instances no change is required in grates or fire box. Heated air is supplied in proper quantities and distributed over the top of the bed of fuel where it comes in contact with the gases and carbon given off the coal, causing increased combustion and consequently additional heat for the generation of steam. Details of a test of the operation of a 300-horse power Sterling water tube boiler, made at Chicago, Ill., by O. F. Oyster, Deputy Smoke Inspector, are presented. This shows a net saving of 20.2 per cent in coal. Another test, on a return tubular boiler, shows a saving of 15.6 per cent. The Parsons Company claims that it can eliminate 96 per cent of the smoke as per readings made in accordance with the U. S. Standard Ringlemann Smoke Chart. It is stated that the purchase of this equipment does not inflict a hardship upon manufacturers and others who use bituminous coal, as it can be installed at a low cost and this is soon repaid by the saving made in fuel consumption.

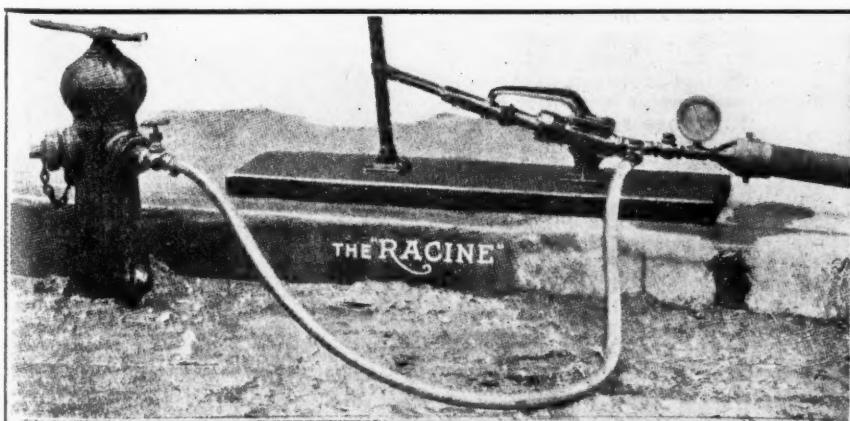
Economical Rock Breaker

A ROCK breaker of the jaw type which is claimed to require less power than any other crusher is made by the Henry



ROCK CRUSHER, JAW TYPE

Martin Brick Machine Manufacturing Co., Lancaster, Pa. As shown in the cut, the flywheel capacity is unusually large and the pulleys, shafts, pulley bricks and supports are large and strong, ensuring easy running and economy of power.



CONVENIENT DEVICE FOR TESTING FIRE HOSE

Police Signal System

Before City officials at police headquarters in Buffalo last week Louis W. Miller, of Rochester, gave a second demonstration of his recently patented police signal system. "It's an excellent thing," said Mayor Fuhrmann, after listening with great interest for nearly an hour to the explanation by Mr. Miller. "I think it would be a good investment for the city in the saving of expense, and, as Mr. Miller says, in increasing the efficiency of the police force." Commissioners Zeller and Doherty were outspoken in praise, and Chief Regan has been delighted with it since it was first shown to him. Others present this afternoon were Captain J. J. H. Brown, William H. Kinch, Henry P. Burgard, Augustus F. Scheu and John F. Nagle, who are interested in the company recently formed to install the system, and Commissioner Ward, of the Department of Public Works.

The system is being installed in No. 3 Precinct at the expense of the company. This will be the first city in which it has been placed in operation, and the result is awaited with much interest by police departments throughout the country.

Auto Patrol Wagons—The six new motor patrols for the Detroit Police Department have been completed by the Packard Motor Car Co. and are now being tried out on the East Grand Boulevard.

Pyrene

At a recent test given to Pyrene in Paterson, N. J., gasoline soaked bundles of cotton waste were extinguished with three gallons of chemicals. A similar bundle of waste with a like quantity of gasoline was again set afire and less than one quart of Pyrene extinguished the blazing mass. Then a fire made of acetylene carbide was extinguished with Pyrene. The test was very satisfactory and it is probable that the Fire and Police Commissioners will at some future meeting consider installing the tanks in the local department. The agents claim that the liquid will not harm the finest silks and they also claim to have the endorsement of the board of fire underwriters.

New Fire Apparatus Company—A company to manufacture combination automatic fire apparatus, patented by Harry W. Eisenbise, a local inventor, is being organized in Reading, Pa.

Sanitary Street Cleaning

THE National Street Cleaning Company, which manufactures the Harn Sanitary Street Cleaner, will build a factory in St. Paul for the manufacture of their machines. The Harn device combines the brush and vacuum principles. The announcement is made by C. O. Lauritzen, 611 Pioneer Press Building, St. Paul, one of the directors of the company.

Gasoline Traction Engine

At a trial of the new gasoline traction engine invented by Geo. W. Morris, Racine, Wis., it pulled 10 Deere plows, each 14 in. wide, turning over a strip of land 140 in. wide and from 6 to 8 in. deep. It is reported that Mr. Morris, who was formerly superintendent of the J. I. Case Threshing Machine Company's works, will organize a company to manufacture the machine.

TRADE NOTES

Cast-Iron Pipe—Chicago: Routine orders are keeping up at a fairly satisfactory rate. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham: The situation in this market is not so encouraging owing to the failure of large contracts to materialize. Little business has been placed in the last two weeks. Quotations: 4 to 6-inch, \$22.50; 8 to 12-inch, \$21.50; over 12-inch, average, \$20.50. New York: Prospects of business with private companies has improved of late. Quotations: 6-inch, carload lots, \$23.50 to \$24.

Lead—The lead market is sagging in the West, and in St. Louis quotations have been reduced from 4.30c. to 4.27½c. This price is made by outside selling interests, but the American Smelting & Refining Company continues to maintain its quotation in East St. Louis at 4.32½c. This practically puts it out of the market and outside sellers are doing most of the trading there. The New York market remains firm and very little interest is being taken in the situation here. The American Smelting & Refining Company is making the lowest price in this vicinity, offering the metal at 4.40c.

Liquified Illuminating Gas—Within two months, it is reported, work will begin on the construction of a factory on the outskirts of Atlanta, Ga., for the manufacture of liquid gas. The operation will be conducted under the patents for which the Blaugas Company of America, New York City, owns the American rights. J. J. Kerrigan, New York, promoted the project. The gas is to be manufactured and delivered in steel vessels imported from Germany. These are to be installed in buildings where the gas is to be used and connected to ordinary gas pipes.

Cement Sacks—The campaign which the Universal Portland Cement Company has been conducting for the purpose of improving the condition of returned sack shipments has proven a gratifying success. More and more sacks are being returned daily bundled according to the method which has been recommended. As this not only increases the facilities for handling the sacks at the mills, in passing credit to customers for returned sacks but eliminates many disputes. The sack department feels well repaid for the efforts put forth in this direction.

Rock Quarry—The San Dimas rock quarry, recently installed in Los Angeles County by Henshaw, Bulkley & Co., San Francisco, Cal., machinery merchants, is now in operation with a daily output of 2000 tons. Both Santa Fé and Pacific Electric railroads are constructing branch lines over 20 miles long to this quarry.

Portland Cement—The Mobile Portland Cement & Coal Company, Mobile, Ala., will commence work early in October on the construction of a cement plant of 3000 barrels capacity at St. Stephens, Ala., where it owns large cement deposits and coal fields. The company is also developing 10,000 acres of coal land on the Warrior River.

New Cement Plant—Contracts are now being let for a large cement plant to be erected in the vicinity of New Orleans, La., by the Mobile Portland Coal & Cement Company, Mobile, Ala. Work on the buildings will probably begin next month.

Water Contract Receivers—Benjamin Barker, Jr., and James G. Shaw, New York, N. Y., have been appointed temporary receivers for the firm of Patterson & Co., contractors on the Bull Hill tunnel of the Catskill Aqueduct, by Judge Ward of the United States Circuit Court, with a bond of \$20,000, in a suit for a dissolution of the partnership brought by James W. Patterson, Jr., of Pittsburgh, against John W. Patterson, of Putnam County, N. Y. The receivers are authorized to continue work on the contract, and creditors are ordered to show cause on Oct. 6 why the receivership should not be made permanent.

The liabilities are said to be \$107,649, consisting of secured, \$38,495; on open account, \$26,000, and notes not due, \$43,154. The assets are nominally \$281,142, consisting of plant, \$91,000; estimates, \$29,142; retained percentage, \$32,000; held for tunnel trimming, \$20,000; profit on cement, \$20,000; calculated profit on concrete, \$89,000. The partnership was formed on March 23, 1909. It is said that about half the work is completed on the tunnel contract.

Consolidation of Companies—The Tempe Light and Power Company, Tempe, Ariz., and the Mesa Light and Power Co., Mesa, Ariz., have been consolidated by the purchase of their properties by the South Side Gas Co., Phoenix.

Canvas Belting—The standard prices for stitched canvas belting will be changed on October 1, and all users of such belting are requested to obtain the new list from any one of the following companies: Sawyer Belting Co., Cleveland, Ohio; American Belting Co., Youngstown, Ohio; Boston Woven Hose & Rubber Co., Boston, Mass.; Carton Belting Co., Allston, Mass.; National Belting Co., Lawrence, Mass.; Mt. Vernon Belting Co., Baltimore, Md.; Maryland Belting & Packing Co., Baltimore, Md.; Atlas Belting Co., Chicago, Ill.; Rossendale-Reddaway Belt & Hose Co., Newark, N. J.; Chesapeake Belting Co., Baltimore, Md.

Corrugated Culverts—The Canton Culvert Co., of Canton, O., reports a recent sale of several hundred linear feet of 60-inch diameter "Acme" (nestable) corrugated galvanized "No-Co-Ro" metal culverts to a prominent engineering and contracting concern in New York for use as an intake from a crib to an electric power-house on the bank of the Connecticut River. Upon investigation, the engineer in charge found it a practical and simple matter, by reason of the characteristic construction of the "Acme," to calk the lateral flange-joints with an inexpensive waterproof cement, making the culvert sand-suction tight, and also facilitating installation through the convenience of setting up the culvert in 20-foot break-joint lengths on the river bank, transporting these on a scow and lowering them for divers to join these together under the water.

Lehigh Cement—The September bulletin published by the Lehigh Portland Cement Co., Allentown, Pa., contains an illustration of the comfort station, Washington, Illinois street and Kentucky avenue, Indianapolis, Ind. Lehigh Portland cement was used largely in the construction.

Crushing Plant—The Phillips Construction Company will shortly install a crushing plant near Corona, Cal., with a capacity of about 500 tons daily.

Spiral Pump—This new water lifter, known as the Blazer Patent Spiral Pump, is now being manufactured by the Humphreys Company, Mansfield, O. Announcement has just been made that the company will immediately start the marketing of this product, this announcement having been preceded by exhaustive tests in which the merit of the pump has been proved to the company's entire satisfaction. As a part of these tests one of the Blazer pumps has been in use at a well at the plant of the Humphreys company day and night for eight days, furnishing 300 gallons of water a minute, this being 18,000 gallons an hour or 432,000 gallons a day, and a belief is expressed that this capacity can be materially increased. The conditions in connection with this test are such as to demonstrate admirably the adaptability of the pump to some municipal purposes, the pump being located 75 feet below the point of discharge. The inventor of this pump, A. N. Blazer, of Mescalero, N. M., devoted eighteen years to the development of the idea.

Smokeless Furnace—The International Smokeless Furnace Company, Peoples' Gas Building, Chicago, manufacturer of furnaces for steam and power plants, arches, grates and annealing and tempering furnaces, has increased its capital stock from \$15,000 to \$50,000. The company has recently completed the installation of new and modern machinery in its plant at 719 Quincy street and is now in position to take care of its rapidly increasing business.

Crushing Plant—A new quarrying and crushing plant has been established by the Capital Stone Company, Columbus, Ohio, in which Felix Jacobs of the Kilbourn & Jacobs Mfg. Company is interested. As the property is developed considerable additional machinery will undoubtedly be required. The rock breaker already installed has a capacity of 800 tons daily.

Transparent Drawing Paper—A machine for making ordinary drawing paper transparent without affecting the lines of the drawing has been brought out by Topping Brothers, 122 Chambers street, New York. The purpose of the machine is to make possible blue printing direct from original drawings. It employs an electric process said to cost about $\frac{1}{4}$ cent per square yard treated. It is further claimed that worn and wrinkled tracings are by this treatment renewed and made more effective for blue printing.

Portable Furnaces—The Rockwell Furnace Company, 26 Cortlandt street, New York, N. Y., manufacturers of portable and other furnaces, has opened a branch office in the Fisher Building, Chicago, Ill., Rooms 718 and 719, in charge of A. L. Stevens, an experienced furnace engineer. This will place the company in closer contact with the Western trade.

Seamless Tubes—The National Tube Company, Pittsburg, Pa., illustrate in a series of colored desk blotters some incidents in the history of the manufacture of tubing from the earliest times to the present methods used in machinery. Shelby seamless, cold-drawn steel tubes.

Traction Shovel—The Union Sand & Material Company, St. Louis, Mo., has just installed at its Kansas City, Mo., plant a 35-ton traction steam shovel manufactured by the Ohio Steam Shovel & Dredge Company, Cincinnati, Ohio.

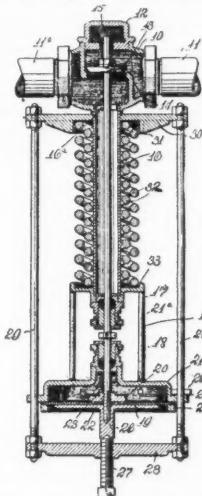
PATENT CLAIMS

970,772. CULVERT-PIPE. Carl O. Wold, Minneapolis, Minn., assignor of one-half to Even E. Ellertson, Minneapolis, Minn. Serial No. 536,195.

A conveyor pipe composed of sections placed end to end, a band inclosing the joint between said sections, the ends of said band having parts lapping by one another and provided with longitudinal slots, and a key fitting into said slots and movable transversely with respect to said band to draw the ends thereof together and clamp the joint between said sections, substantially as described.

970,630. FIRE-PUMP GOVERNOR. Nathaniel Chase Locke, Salem, Mass., assignor to Locke Regulator Company, Salem, Mass., a Corporation of Massachusetts. Serial No. 509,627.

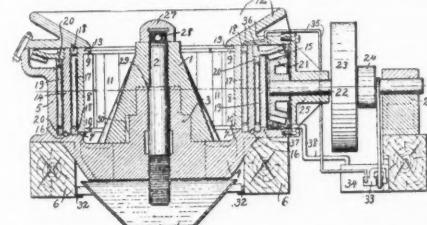
An apparatus of the kind described, comprising a valve casing adapted to connect with a steam service pipe, a single seated valve in the casing, a steam and water leg



opening from the under side of the valve casing, a water chamber containing water under pressure beneath the water leg, a diaphragm in said chamber, a stem connected with the diaphragm and with the valve, a slide frame connected with the diaphragm, and a coil spring arranged around the water leg and actuating the slide frame.

970,571. CRUSHING-MACHINE. Josiah E. Symons, Sheridan, Ind.—Serial No. 388,723.

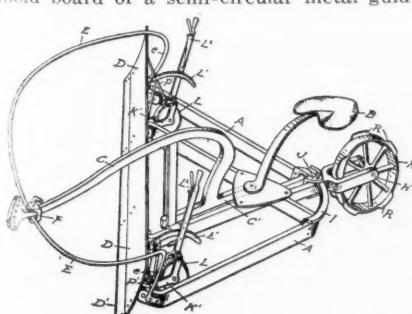
In a crushing-machine, in combination, a circular main frame having a spider-armed bottom provided with a central hub pro-



jected upwardly from said bottom; and a crusher-head fitted for support around said hub and slidably mounted thereon.

970,580. ROAD DRAG, GRADER AND SCRAPER. Walter S. Walker, Helena, Mo. Serial No. 543,996.

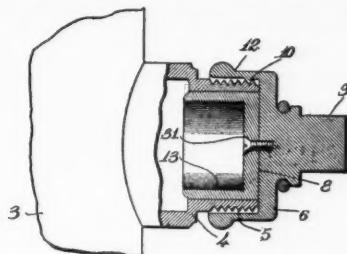
In a device of the character described the combination with the land bars and mold board of a semi-circular metal guide



the shanks thereof rigidly fastened to said land bars and projected vertically upward and the guide protected horizontally forward over said mold board, substantially as shown and set forth.

969,905. CAP FOR HYDRANTS. William S. Reed, Leominster, Mass. Filed Dec. 12, 1908. Serial No. 467,224.

The combination with a screw-threaded nipple, of a cap therefor having adjacent the open end thereof a cylindrical portion



THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Indiana.....	Brazil.....	Oct. 7, 11.30 a.m.....	Improving 2 1/2 miles, Harrison township free macadamized road	James L. Burns, County Auditor
Ohio.....	McConnelsville.....	Oct. 7, noon.....	Grade and macadamize one mile of road, cost \$6,470.20,.....	Jas. C. Wonders, St. Hwy. Comr.
Ohio.....	Sandusky.....	Oct. 7.....	Resurfacing with asphalt, cost \$10,000.	R. B. Smith, City Engineer.
Wisconsin.....	Kenosha.....	Oct. 7.....	Paving 17,643 yards with brick.....	M. J. Scholey, Chm. St. Ass't Com.
Pennsylvania.....	North Braddock.....	Oct. 7.....	Paving three streets.....	C. A. Stewart, Boro. Engr.
Kansas.....	Hutchinson.....	Oct. 7, 3 p.m.....	Building 10,000 sq. ft. delinquent sidewalks.....	E. J. Metz, City Clerk.
Ohio.....	Delaware.....	Oct. 8, 2 p.m.....	Constructing Hyattville road.....	W. F. Whittier, County Surveyor.
Ohio.....	Toledo.....	Oct. 10.....	Furn. material and treating with 3 applications of Carb-o via No. 2, Brown road in Jerusalem and Oregon Townships.....	C. J. Sanzenbacher, Co. Auditor.
Pennsylvania.....	Pittsburg.....	Oct. 10.....	Bldg. 3 roads, 1500 ft., 800 ft., and 1.1 miles, in 3 twps.....	R. J. Cunningham, County Comr.
Indiana.....	Crawfordsville.....	Oct. 10.....	Paving 2 sts. with brick, bitulithic, wood or asphalt.....	F. B. Robinson, City Clerk.
Iowa.....	Council Bluffs.....	Oct. 10, 5 p.m.....	Paving with vit. brick block portion of Broadway and Main st.....	A. W. Casady, City Clerk.
California.....	Pomona.....	Oct. 10, 3 p.m.....	Furnishing 6 to 20 barrels, 75 per cent asphalt oil.....	T. R. Trotter, City Clerk.
Pennsylvania.....	Norwood.....	Oct. 10, 6:30 p.m.....	Constructing cement sidewalk.....	R. J. Macougray, Township Clerk.
Pennsylvania.....	Austin.....	Oct. 11, 2 p.m.....	Improving 5,000 linear ft. Costello road, 16 ft. wide, with Tel-ford, bituminous macadam or brick, 9,238 linear ft. conc. curb.	Jos. W. Hunter, State Hwy. Comr.
Oklahoma.....	Norman.....	Oct. 11, 8 p.m.....	Improving streets in District No. 8.....	A. R. Clements, City Clerk.
Minnesota.....	Crooksville.....	Oct. 11, 8 p.m.....	Paving about 20,856 sq. yds.; various materials.....	A. M. Childs, City Clerk.
New Jersey.....	Freehold.....	Oct. 12, 11 a.m.....	Bldg. 5,175 ft. gravel road, Monmouth County.....	G. W. Patterson, Jr., Ck. Bd. Fr'hl Commissioner Public Works.
New York.....	Olean.....	Oct. 12, 8.30 a.m.....	Construct 1,700 sq. yds. brick paving, 9,000 ft. stone curbing.	A. B. Maxwell, City Clerk.
Iowa.....	Ames.....	Oct. 12, 8 p.m.....	Paving alley with vit. brick, lay 1380 ft. pipe sewer.....	L. M. Ransbottom, County Auditor.
Indiana.....	Vincennes.....	Oct. 13.....	Constructing gravel roads.....	R. C. Ozman, City Clerk.
Nebraska.....	Lincoln.....	Oct. 14.....	Paving two streets.....	C. J. Sanzenbacher, County Auditor.
Ohio.....	Toledo.....	Oct. 14, 10 a.m.....	Repairing stone road No. 29.....	J. T. Day, Pres. Board of Pub. Wks.
Wisconsin.....	La Crosse.....	Oct. 14, 2 p.m.....	Paving Division street with brick.....	R. S. Harvey, Mayor.
Missouri.....	Eldon.....	Oct. 15, 8 p.m.....	Constructing cement sidewalk.....	F. W. Raymond, City Auditor.
South Dakota.....	Aberdeen.....	Oct. 15.....	Constructing sidewalks.....	W. B. Jennings, County Auditor.
Indiana.....	Franklin.....	Oct. 15, 10 a.m.....	Bldg. gravel road on the Johnson-Shelby County line.....	Wm. T. Roberts, County Auditor.
Indiana.....	Princeton.....	Oct. 15, 10 a.m.....	Bldg. 4 gravel roads in Wabash twp.....	Capt. David L. Stone, Constr. Q. M.
Oklahoma.....	Fort Sill.....	Oct. 15, 10 a.m.....	Grading roads and constructing concrete walks, new Artillery Pt.	Geo. E. Simmons, Pres. B. I. Loc. Imp.
Illinois.....	Peoria.....	Oct. 15.....	Resurfacing Perry ave. with asphalt.....	E. F. Hennessy, Town Clerk.
New York.....	North Tarrytown.....	Oct. 15, 10 a.m.....	Improving two highways.....	County Commissioners.
Ohio.....	Lisbon.....	Oct. 15.....	Grading park roads.....	E. C. Lease, Dir. Pub. Service.
Ohio.....	Fostoria.....	Oct. 17, noon.....	Paving six streets with brick or bitulithic, 21,000 yds.....	
New Jersey.....	Elizabeth.....	Oct. 17, 8:30 p.m.....	Trap block paving, 2 jobs: 4956 and 3260 sq. yds. on sand base, 300 and 300 lin. ft. new curb, reset 2037 and 1320 lin. ft., sewer, etc.	N. K. Thompson, Street Comr.
California.....	Oakland.....	Oct. 19, 11 a.m.....	Improving Twelfth street.....	J. W. Nelson, Secy. Bd. Pub. Wks.
Ohio.....	Toledo.....	Oct. 19, 10 a.m.....	Macadamizing county road.....	C. J. Sanzenbacher, County Aud.
Washington.....	Spokane.....	Oct. 31, 2 p.m.....	Improving three streets.....	J. C. Argall, Sec'y Bd. Pub. Wks.
SEWERAGE				
Ohio.....	Youngstown.....	Oct. 7.....	Constructing sewers in four streets.....	Board of Public Service
Pennsylvania.....	Harrisburg.....	Oct. 7, noon.....	Bldg. sewers in seven streets.....	W. W. Caldwell, Commissioner.
Illinois.....	Morrisonville.....	Oct. 8, 10 a.m.....	Bldg. 55,000 ft. 10-27-in. vit. tile, 6 retaining walls, etc.	John M. Becker, Town Clerk.
North Dakota.....	Bismarck.....	Oct. 8, 8 p.m.....	Constructing sewer in Sixth st.....	F. E. Young, City Auditor.
Minnesota.....	St. Paul.....	Oct. 10, 2 p.m.....	Building sewer in Erie and Jefferson sts.....	L. W. Runlett, City Engineer.
Ohio.....	St. Clairsville.....	Oct. 10, 1 p.m.....	Constructing septic tank and sewerage system, County Infir.	E. E. Shepherd, County Auditor.
New Jersey.....	Asbury Park.....	Oct. 10.....	Building 50 manholes and 29 flush tanks.....	E. W. Burrows, City Clerk.
New Jersey.....	Ridgewood.....	Oct. 11.....	Constructing 3,300 ft. 8-inch pipe sewers.....	J. Blauvelt, Clk. Village Trustees.
Ohio.....	Cincinnati.....	Oct. 11.....	Constructing mains and laterals in several streets.....	J. J. Wenner, Clk. Bd. Pub. Serv.
New York.....	Sonyea.....	Oct. 11, 2 p.m.....	Alterations to sewage disposal plant at Craig Epileptic Colony.	P. L. Lang, Pres. Bd. Mgrs. Craig Col.
Minnesota.....	Long Prairie.....	Oct. 11, 7:30 p.m.....	Building 2690 ft. 8, 10 and 15-in. pipe sewers.	J. A. Royat, Willmar, Engr.
Pennsylvania.....	Norristown.....	Oct. 12, 8 p.m.....	Constructing 8-inch sewer in Pine street.....	C. C. Rambo, Chm. Sewer Com.
Ohio.....	Massillon.....	Oct. 12, noon.....	Bldg. sanitary sewers on Sippo street.....	J. A. McLaughlin, Clk. Bd. Pub. Ser.
Ohio.....	Cleveland.....	Oct. 15.....	Laying sewer pipe in N. Woodland road.....	J. F. Goldenbogen, Clk. Bd. Co. Com.
Ohio.....	Fostoria.....	Oct. 17, noon.....	Construct, 2,350 lin. ft. 12-in. and 1,460 lin. ft. 15-in. pipe sewers.	J. H. Morton, City Auditor.
Oklahoma.....	Muskogee.....	Oct. 17, 5 p.m.....	Bldg. storm sewers; 2,000 cu. yds. brick or concrete masonry in 3 to 5-ft. sewers; 20,000 cu. yds. excav.; 16,000 ft. 12 to 33-in. tile pipe.....	Charles Wheeler, Jr., City Clerk.
Kansas.....	Lawrence.....	Oct. 17, 5 p.m.....	Constructing 2850 ft. 12-inch, 3850 ft. 10-inch, pipe sewer, etc.	F. D. Brooks, City Clerk.
Florida.....	Sarasota.....	Oct. 20.....	Laying about three miles of sewer and water pipes all in same trench; set water supply.....	J. W. Philip, City Engineer.
Illinois.....	Lewistown.....	Oct. 20, noon.....	Constructing about 6,000 ft. 8 to 15-in. pipe sewers and concrete septic tank.....	H. J. Efnor, Clk. Bd. Loc. Imp.
Kentucky.....	Louisville.....	Oct. 21.....	Constructing section B, Frankfort ave. sewer, Contract 74.....	P. L. Atherton, Chm. Comrs. Sew.
Minnesota.....	St. Cloud.....	Oct. 31.....	Bldg. addition to sewer outlet on Fourth street.....	E. C. Scott, City Clerk.
Indiana.....	Shelbyville.....	Nov. 1.....	Completing sanitary sewer system.....	L. E. Webb, City Clerk.
Minnesota.....	Canby.....	Nov. 3, 8 p.m.....	Elec. equipment for operating sewage pump, including 15 kw. a. c. generator, switchboard, 7.5 h. p. motor, wire, etc.....	John S. Dodds, City Engineer.
WATER SUPPLY				
Utah.....	Salt Lake City	Oct. 7.....	Bldg. 500 ft. 20-in. and 17,200 ft. 18-in. c. i. water main in City Creek Canyon, cost \$133,000; G. F. McGonigle City Engr.	H. G. McMillan, Chm. Bd. Pub. Wks.
Nebraska.....	Decatur.....	Oct. 10.....	Building water works.....	G. F. Morley, Village Clerk.
Oklahoma.....	Mannsville.....	Oct. 10.....	Constructing water works.....	Board Village Trustees.
Ohio.....	Columbus.....	Oct. 10.....	Installing motor driven pumping machinery.....	H. S. Holton, Dir. Pub. Service.
Pennsylvania.....	Etna.....	Oct. 10, 5 p.m.....	Building concrete foundation under water tank No. 2, Washington st.....	J. C. Armstrong, Borough Clerk.
Ohio.....	Reading.....	Oct. 11.....	Constructing water mains, hydrants, etc.	C. V. Dils, Clk. Bd. Pub. Affairs.
Kentucky.....	Louisville.....	Oct. 11.....	Furnishing water tube boiler 30,000,000 gallon steam turbine driven centrifugal pump.....	Pres. Bd. Pub. Wks.
Ohio.....	Cleveland Hgts.	Oct. 11, noon.....	Bldg. water mains in Noble road; F. A. Pease Eng. Co., Civl. Engr.	H. H. Canfield, Village Clerk.
Ohio.....	Columbus.....	Oct. 12.....	Furnish. motor-driven loft-lift or direct service pump.....	E. B. Harrington, Sec'y. Bd. Fire and Water Comrs.
Missouri.....	Kansas City.....	Oct. 13.....	Building concrete intake pier.....	Water Committee, City Council.
Minnesota.....	Minneapolis.....	Oct. 14.....	Furn. 2 elec-driven centrifugal pumps, 20,000,000-gals. per day, head 247 ft.; motor, 1300 h.p.; Edward P. Burch, Con. Engr.	R. F. Harbert, Dir. Pub. Service.
Ohio.....	Canton.....	Oct. 15.....	Constructing various improvements, cost \$125,000.....	T. W. Davis, Mayor.
Arkansas.....	Blytheville.....	Oct. 15.....	Proposition for water works.....	E. S. Taylor, Town Clerk.
Washington.....	Oroville.....	Oct. 17.....	Bldg. water works system, entire or in part: well, pumping machinery, reservoir and pipe line.....	

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
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WATER SUPPLY (Continued)

Kentucky.....	Louisville.....	Oct. 17, noon.....	Furnishing six four-wheeled catch basin carts.....	City Buyer.
Florida.....	Sarasota.....	Oct. 20.....	Bldg. 75,000 gal. tank and tower not less than 100 ft. tall; laying between two and three miles of sewer and water pipes all in same trench; also furn. about twenty double fire hydrants.	John W. Philip, City Engineer.
Ohio.....	Euclid.....	Oct. 24, noon.....	Constructing 12 and 16-inch water mains.....	N. J. Brewer, Village Clerk.
New York.....	Binghamton.....	Nov. 1, 10 a.m.....	Bldg. 5,000,000-gal. distributing reservoir, inclu. 2,900 cu. yds. concrete, plain and rein.; 50,000 cu. yds. excav.; \$20,000 bond.	John D. Davidson, Sec'y. Water Bd.
Florida.....	Lakeland.....	Nov. 1.....	Improvements to water and light plant, estimated cost, \$40,000	H. L. Swatts, City Clerk.

BRIDGES

New York.....	Castkill.....	Oct. 7.....	Building bridge over Vossenkill.....	Town Board.
Nebraska.....	Gothenburg.....	Oct. 8.....	Bldg. bridge over Platte river, cost \$19,900.....	County Clerk.
California.....	Los Angeles.....	Oct. 10.....	Pldg. bridge over Arroyo Seco at Highland Park; cost, \$130,000.	I. B. Noble, Co. Surv.
Pennsylvania.....	Allentown.....	Oct. 10, 10 a.m.....	Altering Linden street bridge.....	J. S. Troxell, County Clerk.
New Jersey.....	Jersey City.....	Oct. 10, 2 p.m.....	Repairing 13th st. and Mercer st. viaducts.	G. T. Bouton, Clk. St. & Water Bd.
Pennsylvania.....	Norristown.....	Oct. 11, 11 a.m.....	Constructing stone arch, highway bridge.	James Krewson, Chm. County Comr.
Oklahoma.....	Tulsa.....	Oct. 11, 6 p.m.....	Bldg. bridge across Arkansas river.	W. L. North, Chm. County Comr.
New York.....	Orangetown.....	Oct. 12.....	Bldg. bridge over Pearl River.	Town Superintendent Wahrenberger.
Ohio.....	Ashland.....	Oct. 12, noon.....	Constructing Race street arch.	J. F. Wetley, County Auditor.
Indiana.....	Evansville.....	Oct. 13, 10 a.m.....	Erecting and rebuilding Farquhar bridge, German Twp.; re-pair two bridges.	Harry Stinson, County Auditor.
Indiana.....	Noblesville.....	Oct. 14, 2 p.m.....	Building bridge over Fall Creek bet. Hamilton and Marion Cos.	Geo. Griffin County Auditor.
Ohio.....	Cincinnati.....	Oct. 14, noon.....	Constructing concrete bridge.	Fred Drehs County Clerk.
Kansas.....	Ottawa.....	Oct. 15.....	Constructing piers for Ft. Scott crossing approach.	J. F. Berlin, Township Trustee.
Missouri.....	St. Joseph.....	Oct. 15, 11 a.m.....	Plans for viaduct or subway under railroad tracks, So. Sixth st.	Alfre'l Meier, Pres. Bd. Pub. Wks.
Pennsylvania.....	Wilkes-Barre.....	Oct. 19, noon.....	Constructing reinforced viaduct.	J. M. Norris, County Controller.
Pennsylvania.....	York.....	Oct. 20, 10 a.m.....	Constructing two concrete bridges, 30-foot span.	W. H. Strine, Clerk County Comr.
California.....	Ukiah.....	Oct. 31.....	Constructing bridge across Russian Gulch.	Board of Supervisors.

LIGHTING AND POWER

New Jersey.....	Allentown.....	Oct. 10, 8 p.m.....	Bldg. municipal electric lighting plant; 25 kw., dir. con. 3-wire generator, 250 volts; 30 h. p. internal combustion engine, 15-ampere, 8-hr. storage battery; 2½-miles transmission lines, street lights, switchboard, shafting and equipment.	A. Robinson, Mayor.
Washington.....	Walla Walla.....	Oct. 15, 2 p.m.....	Lighting 186 or more arc lights with electricity; three and five year periods.	T. D. S. Hart, City Clerk.
Florida.....	Lakeland.....	Nov. 1.....	Improvements to light and water plant; cost \$40,000.	H. L. Swatts, City Clerk.
Montana.....	Missoula.....	Nov. 20.....	Constr. \$445,000 power plant on Rock Creek at Stevensville.	E. S. Dorman, Ch. Engr., R. C. Power Company.

MISCELLANEOUS

New Jersey.....	Soho.....	Oct. 7, 8 p.m.....	Building fire house.....	L. E. Voorhees, Chm. Pub. Bldg. Com.
Missouri.....	St. Louis.....	Oct. 7.....	Installing 30-ton electric travelling crane.	Maxine Reber, Pres. Bd. Pub. Imp.
Ohio.....	Fairport.....	Oct. 8, 10 a.m.....	Bldg. breakwater at Fairport.	John Mills, Col. U. S. Engrs., Clvld.
New York.....	Buffalo.....	Oct. 8, 11 a.m.....	Construction of Adams Memorial Hospital.	F. G. Ward, Comr. of Pub. Works.
New Jersey.....	Jersey City.....	Oct. 10, 2 p.m.....	Removal of ashes, garbage and kitchen refuse for 1 yr. from Dec. 1	G. T. Bouton, Clk. Bld. St. & W. Com.
Saskatchewan.....	Moose Jaw.....	Oct. 10, 8.30 a.m.....	Furnishing combination chemical and hose wagon.	W. H. Heal, City Clerk.
New Jersey.....	Bradley Beach.....	Oct. 10.....	Building flume.	Joint Com. Bradley Bch. & Avon Br.
Indiana.....	Fort Wayne.....	Oct. 11, 7.30 p.m.....	Furnishing auto patrol.	W. S. Spalding, Sec'y Bd. Pub. Saf.
Pennsylvania.....	Philadelphia.....	Oct. 11, noon.....	Constructing masonry and embankment.	Chief Engineer, Reading Terminal.
New Jersey.....	Paterson.....	Oct. 14.....	Furnishing creosoted piles and lumber for wharf.	W. A. Hopson, Chm. Com. Fire Dept.
California.....	Los Angeles.....	Oct. 14.....	Constructing 1,050 ft. reinforced concrete retaining walls.	H. B. Ferris, Sec'y. Bd. Pub. Wks.
Nevada.....	Winnemucca.....	Oct. 15.....	Disposal of refuse for 10 years from Jan. 1, 1912, \$5,000 check.	R. E. Trousdale, Clk. Bd. Cy. Comrs.
Massachusetts.....	Boston.....	Oct. 17, noon.....	Furn. 1,000 ft. 2½ in. best brand fire hose.	Louis F. Rourke, Supt. of Streets.
Nebraska.....	Kearney.....	Oct. 17.....	Building Tuberculosis Hospital.	Geo. E. Ford, City Clerk.
New York.....	Poughkeepsie.....	Oct. 18, noon.....	Construction, equipment and operation of tri-borough subway and elevated system, 44 miles; private money.	Board of Health.
New York.....	New York.....	Oct. 20.....	Bldg. new subways, 44 miles of trackage; cost \$125,000,000; two plans one with city money.	Pub. Serv. Commission.
Indiana.....	New Albany.....	Oct. 28.....	Removal of garbage.	Public Service Commission.
California.....	San Francisco.....	Nov. 16.....	Construct. two incinerating plants, 120 tons each, cost \$250,000	Board of Public Works.

STREET IMPROVEMENTS

Birmingham, Ala.—Street Committee has adopted report of Special Committee providing for paving some of principal streets on south side; cost about \$270,000.

Birmingham, Ala.—City will pave 10th ave. south from 15th to 21st st.—Maury Nicholson, City Engineer.

Talladga, Ala.—Council has decided to clear East st., North and Jenison sts.

Modesto, Cal.—Bids will be received Oct. 12 for \$10,000 street improvement bonds.—W. O. Thompson, Clerk Board of City Trustees.

Hartford, Conn.—Board of Finance has appropriated \$2,000 for macadam street on Boulevard.

Hartford, Conn.—Plans for proposed State road work have been received by State Highway Commissioner J. H. McDonald as follows: From Engineer Alexander Cann, 12,500 lin. ft. on the Wolcott road in the city of Waterbury, 16,300 lin. ft. on the Killingworth road in the town of Madison, 23,500 lin. ft. on the North Madison road in the town of Madison; from Engineer D. G. Bush, 10,000 lin. ft. on the Torrington road in the town of Norfolk; from Division Engineer R. S. Hulbert, 2,450 lin. ft. on the Waterbury road in the town of Watertown. **Butte, Cal.**—Butte and Colusa County Commissioners will consider building of road in Colusa County.

Glendora, Cal.—Citizens have voted \$20,000 bonds for constructing road over mountain.—Dr. C. H. Wood, Secretary Board of Trade.

Elkton, Fla.—County Engineer C. M. Milburn will at once begin work of preparing map of proposed new road to this section from St. Augustine.

Sarasota, Fla.—City Engineer John W. Philip has requested that bids and samples be sent at once for oils for allaying dust;

also for road binders and prices f. o. b. Sarasota by barrel and in tank car; area to be oiled, about three miles; samples sufficient to cover full width of street; 37 ft. wide desired to be used as test for 30 or 60 days.

St. Augustine, Fla.—Street and Lane Committee, Chairman Usina, will recommend purchase of another \$500 asphalt plant.

Rome, Ga.—Citizens will vote Nov. 8 on \$50,000 bonds for street paving.

Pekin, Ill.—Board of Local Improvements is considering paving of Park ave.

Quincy, Ill.—Council has ordered construction of brick sidewalks on number of streets at estimated cost of \$18,035.

Elkhart, Ind.—Paving of Garfield ave. is being urged.

Elkhart, Ind.—Paving of Oakland ave. is being urged.

Richmond, Ind.—Cost of paving 8th st. has been estimated by City Engineer Fred Charles at \$6,500.

South Bend, Ind.—Construction of brick pavement on Maple st. is being considered.

Garnett, Kan.—City will lay one mile of rock road near 4th ave.

Leavenworth, Kan.—Cost of repairing and paving 18,300 sq. yds. on N. and S. Broadways has been estimated at \$30,744; on 4th ave., 825 sq. yds., \$1,386.—Jos. O'Neil, City Engineer.

Lexington, Ky.—Bids will be received Oct. 7, 10 a. m., for \$19,374.02 Ashland ave. and \$51,060.14 N. Limestone st. improvement bonds.—John Skain, Mayor.

Louisville, Ky.—Board of Public Works is considering paving of intersection of Broadway and 2d st., but work will probably not be done until next spring.

Paducah, Ky.—City will soon ask bids on construction of concrete sidewalks, curbs and gutters on Jefferson and 10th sts.; grading and graveling 14th st., and for

construction of sidewalks on Flournoy st.—L. A. Washington, City Engineer.

Denton, Md.—Town will pave sidewalks and shell Franklin st.

Westernport, Md.—Citizens have voted \$10,000 bonds for street paving.

Middleboro, Mass.—Town Trustees will improve some of central streets.

Taunton, Mass.—Council has adopted order for widening of Caswell ave.

Duluth, Minn.—Cost of grading 5th st. and paving with tar macadam has been estimated at \$40,527, and a sanitary sewer in Wellington alley at \$1,167.

Moss Point, Miss.—Construction of shell driveway between this place and Pascagoula is being urged.

Kansas City, Mo.—Council has passed following ordinances: Constructing sidewalks on 20 streets; establishing grades on six streets; changing grade on 11th st.; constructing stone curb on five streets, and repairing asphalt on 43 streets.

St. Louis, Mo.—St. Louis County Court is considering widening and resurfacing of Clayton road.

Herkimer, N. Y.—Village Board has ordered issuance of bonds for paving four streets.

Yonkers, N. Y.—Plans have been prepared for improvement of Winifred ave.

Cincinnati, O.—County Commissioners have ordered plans and specifications for improvement of River road at cost of \$3,743, and for improvement of Mill road, from Totten's gate to Loveland and Madeira pike, at cost of \$2,853.

Columbus, O.—Pike Commissioners have authorized improvement of Westerville road; distance four miles.

Girard, O.—Council has decided to pave Liberty st.

Girard, O.—Bids will be received by J. F. McFarlin, Village Clerk, Oct. 24 for \$10,000 sidewalk bonds.

Hamilton, O.—Bids for improvement of the Columbia Bridge road towards Venice for $1\frac{1}{2}$ miles have been rejected by the State Highway Commissioner, John C. Wonders, and the County Commissioners.

Mingo, O.—City will widen, grade and pave Commercial st.

Shawnee, O.—Street improvement bonds, \$7,800, have been awarded to Dennison & Co., Cleveland, O.

Youngstown, O.—Residents of Mahoning and Columbiana counties are making plans for building of a boulevard 20 miles in length.

Sallisaw, Okla.—Citizens have voted \$4,000 bonds for street crossings.—A. W. Bates, Engineer.

Baker City, Ore.—Council has passed resolutions calling for bids for paving of North Main, Auburn, Resort, Bridge and 2d sts.; cement walk will be laid on 4th st.

North York, Pa.—Council has adopted ordinance for extension of 8th ave. sewer.

Pittsburg, Pa.—Council is considering ordinances for repaving S. 26th st.; cost, \$4,500; Josephine st., \$3,500, and grading, paving and curbing of Industry st.

Prospect Park, Pa.—Council has decided to readvertise for bids for the macadamizing of a number of streets and the laying of curbs and gutters; three months ago the contract was awarded to Frank Rawlins, of this city, but Chief Burgess Ellis C. Abrams refused to accept security; work will amount to about \$27,000.

Scranton, Pa.—Plans have been prepared for repair of Providence road at cost of \$15,000.

Sharon, Pa.—Council has decided to pave Stambaugh ave.; cost \$4,500.

Trappe, Pa.—Arrangements are being made to grade and macadamize main streets of this town.

Upland, Pa.—Council has passed ordinance for widening and paving Upland ave.

York, Pa.—In connection with adoption of new specifications for street paving in the city it is probable that engineer or chemist will be employed to pass upon quality of all materials put upon streets.

Charleston, S. C.—Charleston Terminal Co. will pave Concord st.—W. E. Huger, President.

Conway, S. C.—Horry County will vote in November on \$100,000 bonds for road improvements.

Germantown, Tenn.—City is planning to lay several blocks of concrete walks.

Abilene, Tex.—Precinct No. 4, Taylor County, will vote Oct. 22 on \$100,000 road bonds.

Big Springs, Tex.—Citizens have voted \$100,000 good road bonds; Government Engineer J. R. Thomas will supervise work.

Brownsville, Tex.—Mayor Kowalski is urging election on \$80,000 bonds for paving and draining streets.

Houston, Tex.—Paving of Harrington st is being urged.

Miles, Tex.—Citizens have defeated proposed issue of \$25,000 road bonds.

Plano, Tex.—Citizens have voted \$1,500 street improvement bonds.

Port Lavaca, Tex.—City Commissioners are considering paving of North st.

Sherman, Tex.—City is considering paving of sidewalks on Houston, Pecan, Crockett and other streets.—John C. Wall, Mayor.

San Angelo, Tex.—Citizens will vote Oct. 20 on \$20,000 bonds for street paving; contemplating six blocks of vitrified brick paving.

Sinton, Tex.—Citizens have voted \$100,000 bonds to improve roads in San Patricio County.

Stamford, Tex.—Citizens have voted \$10,000 bonds for paving.

Wharton, Tex.—City is considering expenditure of \$15,000 in construction of cement curbs and gutters.—G. S. Gordon, Mayor.

Cabot, Vt.—Town has voted \$2,000 to build concrete sidewalk.

Farmville, Va.—City is considering expenditure of \$30,000 in road improvement; material bitulithic or vitrified brick; granolithic sidewalks and cement gutters on hill-sides.

Norfolk, Va.—County Board of Supervisors is considering improvement of Maple ave. at cost of \$1,000.

Welch, W. Va.—McDowell County is considering \$50,000 expenditure for improvement of road.—W. J. McLaren, Road Engineer.

Tacoma, Wash.—Pierce County will vote Nov. 8 on \$500,000 bonds to improve county roads.

Delton, Wis.—Town Council has voted to raise \$1,200 to continue construction of macadam road between Delton and Kilbourne.

Belleville, Ont., Can.—Council will send the Mayor, Alderman Lott and City Engineer Lindsay on a trip to other cities to inspect permanent pavements.

Ladysmith, B. C., Can.—Council has employed Engineer Topu, Victoria, to prepare estimates for about four miles of concrete sidewalks.

CONTRACTS AWARDED

Andalusia, Ala.—Building 48 miles of grade roads in this county, to Straud & Pruitt, Montgomery.

Bessemer, Ala.—Excavate, grade, curb and slag and to lay sidewalks and curbing on 6th ave., to W. F. Nolan.

Birmingham, Ala.—Traction engine has been purchased by city from the Port Huron Engine and Thresher Co., Port Huron, Mich., at \$6,000.

Montgomery, Ala.—Paving Madison ave. with bitulithic, to Southern Bitulithic Paving Co.; Catoma and other streets, to Barber Asphalt Co.; awards protested by property owners.

Hartford, Conn.—State road work, Chester, about 4,618 lin. ft. of graded road, to Lane Construction Co., Meriden, \$6,900; Cromwell, 6,000 lin. ft. of gravel road, to Joseph D'Aloia, Boston, 90c. per lin. ft.; Woodbridge, 2,200 lin. ft. of gravel road, to E. G. Pardee, Bethany, \$2.53 per lin. ft.; Manchester, 8,508 lin. ft. of gravel road, to Lane Construction Co., Meriden, \$1.68 per lin. ft.; Warren, 3,341 lin. ft. of graded road, to Lane Construction Co., Meriden, \$8.519.55; Easton, 7,635 lin. ft. of graded road, to B. D. Pierce, Jr., Co., Bridgeport, \$15,600.

Perry, Fla.—Grading and paving 3 to 5 miles of streets, to Bryan & Co., Jacksonville.

St. Petersburg, Fla.—Paving streets with brick, to Georgia Engineering Co., \$1.70 per sq. yd.

Tarpon Springs, Fla.—To Chattanooga Paving Co., Chattanooga, Tenn., for paving with vitrified brick; cost, \$45,000.—C. G. Stiles, City Engineer.

East St. Louis, Ill.—Paving portions of Vogel pl., Alhambra Court and 36th st., requiring 15,046 sq. yds. creosoted block pavement and 9,503 lin. ft. granitoid curb, to M. L. Harris Co., about \$42,000.

Elgin, Ill.—To the McCarthy Improvement Co., Davenport, Ia., for paving with mineral rubber N. Spring st., \$52,500.

Pekin, Ill.—Paving portions of three streets, to Jansen & Zoeller, about \$14,000.

Sterling, Ill.—To Roarke & Ridge, for paving Wallace st., \$8,815.

Hammond, Ind.—Paving 117th st. with macadam, to Ahlbom Construction Co., 88c. per sq. yd.

Fort Dodge, Ia.—Paving portions of several streets to Bryant McLaughlin Co.

Sioux City, Ia.—Permanent sidewalks in Tredway's and Rustin's addition, to P. P. Comoli, 12½c. per sq. ft.

Lexington, Ky.—Construction of concrete sidewalks, curbing and guttering on S. Broadway, to C. H. Daugherty; 14½c. per sq. ft. for sidewalk, 45c. for curbing, and 55c. for curbing and guttering.

Louisville, Ky.—Paving 5th st. and Broadway with asphalt, to Barber Asphalt Co., \$9,000.

Hagerstown, Md.—To Victor M. Cushman, to furnish pipe and cement from present time until April 1; for sand, to Steffey & Findlay, \$1.30 per 2,000 lbs.

Monson, Mass.—Concrete sidewalk work to be done this year, to John W. Rochford, Springfield; contract includes resurfacing of old walks as well as the new walks to be laid.

Rockport, Mass.—Constructing State highway, to Tony Leo Thompson, Boston, \$4,906. Other bidders: T. A. Moynihan & Son, Hamilton, \$5,779; F. J. Maguire, West Newton, \$5,493; H. L. Thomas, Middleboro, \$5,873; F. E. Ellis, Melrose, \$5,895; R. F. Hudson, Melrose, \$5,903; L. C. Corchia, Boston, \$6,061.

Cloquet, Minn.—To B. S. Whitman, for construction of concrete crossings, and to Norberg & Burk, for building concrete sidewalks.

St. Joseph, Mo.—Paving portions of Dewey ave. and Idadore st., to Rackliffe Gibson Construction Co., about \$11,298.

Camden, N. J.—Asphalt paving on Division and 25th sts., to Barber Asphalt Co., \$1.71 per sq. yd.

Newark, N. J.—Paving Treat pl. with asphalt paving block, to Hastings Pavement Co., 25 Broad St., New York, \$5,586.

Scarsdale, N. Y.—Grading, draining and macadamizing with bituminous macadam, Sherbrook and Heathcote roads and Griffen ave., total 1.53 miles, to E. L. Erbeck, White Plains, \$18,000; portions of Grand blvd., Brambach ave. and Evart st., total .86 of a mile, to Tony Richards, White Plains, \$10,175.

Akron, O.—State Highway D, Petition No. 318, South Main st. road, to E. McShaffrey & Son, city, \$22,307.79.

Bellaire, O.—Paving Cherry alley, to Chas. Rosser.

Columbus, O.—State Highway D, Petition No. 213, Winchester road, to E. A. Patterson, Malta, \$12,438.

Columbus, O.—Construction of sidewalks in Linden Heights, to Aaron Best, Lorain, 13½c. per sq. ft.; about 45,000 lin. ft. of 4-ft. walk and 2,100 ft. of 5-ft. walk will be laid; to Andrews Asphalt Paving Co., Hamilton, for repairing High st. w/ sheet asphalt, \$70,929.

Fremont, O.—State Highway A, Petition No. 274, Section No. 1, Port Clinton road, Harrison trail, to Callaghan & Parkinson, Bellevue, \$14,064.

Marietta, O.—State Highway C, Petition No. 259, Waterford road, to Frank Beckwith, Malta, \$10,983.

Marietta, O.—Improvement of Waterford road in Washington County, under the provisions of State Highway Act, to Frank Beckwith, Marietta, \$10,893.

Springfield, O.—To Edward Ryan, for paving of W. Main st. with asphaltic concrete, \$65,000.

Toledo, O.—Completing unfinished portion of the "corduroy road" in Oregon Township to McKinney Bros. and M. F. O. Sullivan, \$19,432. County Board considered tenders lowest and most satisfactory, although Wm. McMahon, whose original contracts had been revoked, had again submitted bids which were less than those accepted; Belle View stone must be used in work.

Youngstown, O.—Paving W. Woodland ave., to Miller Bros., \$7,579, and Broadway, to Cleveland Trinidad Asphalt Paving Co., Cleveland, \$11,329.

Oklahoma City, Okla.—Paving, to Shelby-Downard Co., \$124,360; to Cleveland-Trinidad Co., \$34,383, and Western Paving Co., \$391,938.

Portland, Ore.—To Warren Construction Co., Portland, for paving with bitulithic aggregating 50,000 sq. yds., and to Pacific Bridge Co., Portland, for paving 15,000 sq. yds. with bitulithic.

Harrisburg, Pa.—Paving and curbing ten sections of streets, to Barber Asphalt Co., three to Central Construction and Supply Co., one to W. F. Martin; Com. referred nine other sections for which petitions for certain kinds of paving had been received to special committee consisting of Councilmen Wm. Smith, Hedrick and Houseal.

Roaring Spring, Pa.—Paving, to the Wilson Construction Co., Altoona; contract covers about 2½ blocks; cost, \$7,000.

Scranton, Pa.—Paving Luzerne st., to MacDonald Construction Co., \$1.65 per sq. yd.

St. Clair, Pa.—Paving Eleanor st., to Ott Bros., 414 Washington ave., Pittsburg.

Greenville, S. C.—To Bowe & Page, for paving with vit. brick portion of Main st.

Olympia, Wash.—Construction of State aid road No. 82, to M. P. Zindorf, Seattle, Wash.; cost, \$14,000.

Spokane, Wash.—Grading, curbing, paving and sidewalk paving Boone ave., estimate, \$20,300, to L. B. Hamby, \$18,000; paving and sidewalk on 4th ave., granitoid concrete, estimate, \$21,500, to John Fife, \$22,000, and \$1,000 to maintain five years; First Ward subtrunk sewer district No. 17, estimate, \$24,915, to James M. Broad, \$26,665; regrading and paving 3d ave. with asphalt, estimate \$19,700, to Independent Asphalt Co., \$19,250, and \$605 to maintain five years; grading, curbing, paving and sidewalk on Wabash ave., estimate, \$13,700, to Foster & Hindle, \$12,498; Lamont st., estimate, \$2,150, to J. B. Mitchell, \$2,127; Lidgerwood st., estimate, \$8,000, to L. E. Hadley, \$8,000; Walton ave. estimate, \$5,800, to Foster & Hindle, \$5,419.

Tacoma, Wash.—To Wright & Sweeney, to lay cement-concrete sidewalk on N. 35th st., \$2,330; other bidders, Anton Warner, \$2,520, and Erickson & Anderson, \$2,471; estimate, \$2,571; to same, to lay cement-concrete sidewalk on S. 53d, 54th and 55th sts., \$3,850; estimate, \$4,650; to Lister Construction Co., to grade and lay cement-concrete sidewalks on four streets, \$9,690; other bidders, N. A. Jones, \$10,323; Charles A. Maxham, \$9,800; Wright & Sweeney, \$9,986; Barbett Construction Co., \$9,695; Keasel Construction Co., \$9,348; to J. F. Bachelor, for cement-concrete walls on Pine st., \$944.

Superior, Wis.—Paving alley between Tower and Banks and 7th and 8th to Bergen and Anderson, \$1,539.04; paving alley between Broadway and Winter from Ogden to John, to Russell Construction Co., \$357.88; both alleys will be paved with concrete; sidewalk contract to Matt Suland; building wooden walk on the west side of Pine ave., 43 3-4c. per ft.

Superior, Wis.—Macadamizing portions of E. 2d, E. 4th, Clark and Cass sts., to J. B. Palmer, \$5,361.

Superior, Wis.—To Swan Holmquist, for construction of steel plant road at the South End, about \$2,000.

Victoria, B. C., Can.—To Worswick Paving Co., for paving Fernwood rd., \$14,978; Rockland ave., \$14,895, and Richardson st., \$9,770; to Pacific Construction Co., for standard asphalt for Fort st., \$9,702.

BIDS RECEIVED

Montgomery, Ala.—Paving of Moulton st., Southern Paving Co., asphalt, \$1.82; Barber Asphalt Co., asphalt, \$1.88; Southern Bitulithic Paving Co., bitulithic, \$1.95.

Hartford, Conn.—State road work: Town of Cromwell, 6,000 lin. ft. gravel-telford road, including one 24-in. and one 18-in. tile culverts and one reinforced concrete arch culvert; (a) gravel, (b) telford, (c) rubble

drain, (d) cobble gutters; Donahue Bros., Middletown, (a) \$1.49, (b) \$2.19, (c) \$1.15; Roger Kennedy, Middletown, (a) \$1.54, (b) \$2.15, (c) \$1; Pierson Engineering and Construction Co., Bristol, (a) \$1.90, (b) \$2.75, (c) \$1; Ahern Bros., Norwich, (a) \$1.62, (b) \$2.25, (c) \$1, (d) 70c per sq. yd.; F. Arrigoni & Bro., Durham, (a) \$1.45, (b) \$2.05, (c) \$1; A. Brazos & Sons, Middletown, (a) \$1.43, (b) \$1.83; Joseph D. Aloia, 1 North sq., Boston, Mass., (a) 97c, (b) \$2.15, (c) \$1.15; Lane Construction Corp., Meriden, (a) \$1.29, (b) \$1.99, (c) 90c; Town of Easton, 7,635 lin. ft. graded telford road, including three 15-in. and six 18-in. tile culverts; B. D. Pierce, Jr., Co., Bridgeport, \$15,600 for grading and 65c. per lin. ft. extra for telford; E. G. Pardee, Bethany, \$26.950 and 65c.; B. N. Beard Co., Shelton, \$20.500 and 65c.; Town of Manchester, 8,508 lin. ft. gravel-telford road, including seven 15-in. and one 18-in. tile culverts, (a) gravel, (b) telford, (c) rubble drain, (d) cobble gutters; W. M. Bol, Hartford, (a) \$2.12, (b) \$3.12, (c) \$1, (d) \$1.50; Pierson Engineering and Construction Co., Bristol, (a) \$2.60, (b) \$3.30, (c) \$1, (d) 75c.; Ahern Bros., Norwich, (a) \$1.88, (b) \$2.50, (c) \$1.05, (d) 75c.; A. D. Bridge's Sons Co., Hazzardville, (a) \$1.77, (b) \$2.37, (c) \$1, (d) 60c.; Sternberg & Cadwell, West Hartford, (a) \$1.79, (b) \$2.25, (c) \$1, (d) 75c.; Thomas Kearney, Meriden, (a) \$2.25; A. Brazos & Sons, Middletown, (a) \$1.95, (b) \$2.35, (c) 85c., (d) 60c.; Lane Construction Corp., Meriden, (a) \$1.68, (b) \$2.18, (c) 90c., (d) 70c.; Town of Woodbridge, 2,200 lin. ft. gravel-telford road, including three 15-in. tile culverts, E. G. Pardee, \$2.53 per lin. ft. for gravel, 65c. for telford and \$1 for rubble drain; F. Arrigoni & Bro., Durham, \$3.24, \$3.84 and \$1; Town of Chester, 4,618 lin. ft. graded telford road, including three 15-in., two 18-in. and one 24-in. tile culverts and one reinforced concrete arch culvert, (a) grading lump sum, (b) telford per lin. ft., (c) rubble drain; Roger Kennedy, Middletown, (a) \$7.989, (b) \$2.40, (c) \$1; B. D. Pierce, Jr., Co., Bridgeport, (a) \$10,820, (b) 65c., (c) 60c.; William Maloney, West Hartford, (a) \$11.083, (b) \$1, (c) \$1; E. G. Pardee, Bethany, (a) \$9.999; Lewis F. Merritt, Stamford, (a) \$8.461, (b) \$1, (c) \$1.25; F. Arrigoni & Bro., Durham, (a) \$12,415, (b) 60c., (c) \$1; A. Brazos & Sons, Middletown, (a) \$12,468, (b) 60c.; Joseph D. Aloia, 1 North sq., Boston, Mass., (a) \$10,200, (b) 75c., (c) 85c.; Lane Construction Corp., Meriden, (a) \$6,900, (b) 60c., (c) 90c.; Town of Warren, 3,341 lin. ft. graded telford road; Joseph Mascetti, Torrington, \$10,025 for entire grading and 90c. per lin. ft. extra for telford and \$1 for rubble drain; B. D. Pierce, Jr., Co., Bridgeport, \$11,600, 65c. and 70c.; Lane Construction Corp., Meriden, \$8,520, 45c. and 90c.

Champaign, Ill.—Paving Fourth st.: J. W. Stipes, city, bid \$26,664 and J. A. Peter, Syracuse, \$28,775.

Chicago, Ill.—Improvement of following streets and alleys: Alley between Ontario and Erie sts., and St. Clair st. and Lincoln Park blvd., 570 sq. yds. brick pavement on 6-in. Portland cement concrete base with 2-in. sand cushion, Jas. A. Sackley Co., lowest bidder, \$1,645; alley between 48th st. and 49th st., and Calumet ave and Grand ave., 1,020 sq. yds., Jas. A. Sackley Co., \$2,916; alley between Huron st. and Superior st., and Clark st. and La Salle st., 340 sq. yds., \$981; alley between 47th st. and 48th st., and St. Lawrence ave and Forrestville ave., 770 sq. yds., \$2,190; Champlain ave., 42d st. to 43d st., 1,780 sq. yds. of asphalt pavement on 6-in. Portland cement concrete base, American Asphalt Co., \$4,734; Gracefield ave., Evanston ave., to C. M. & St. P. Ry., 3,900 sq. yds. of asphalt pavement on 6-in. Portland cement concrete base, American Asphalt Co., \$11,462; Parker Washington Co., \$11,468; Barber Asphalt Co., \$12,229.

Atlantic City, N. J.—Construction of hard surface pavement on Meadow blvd.: United Paving Co., of Atlantic City, \$36,286 for 20,502 sq. yds. Warrenite pavement.—C. D. Rightmire, County Engineer.

New York, N. Y.—Regulating and repaving with sheet asphalt pavement on concrete foundation the roadway of the following streets and avenues: Mulberry and 5th st.; 1A, for maintaining the asphalt pavement on different streets in the Boro. of Manhattan; 2A, for maintaining the asphalt pavement on different streets in Boro. of Manhattan; 3A, for maintaining the asphalt pavement on different streets in Boro. of Manhattan; Barber Asphalt Paving Co., 20 Church st., \$7,973, \$24,040; Sicilian Asphalt Paving Co., 41 Park Row, \$7,329, \$23,837; Uvalde Asphalt Paving Co., 1 Broadway, \$6,641, \$24,424; Uvalde Asphalt Paving Co., 1A, \$15,745; 2A, \$20,545; 3A, \$27,265; 2A, \$21,290; 3A, \$38,215. Vulcanite Paving Co., 1A, \$14,215; 2A, \$18,515; 3A, \$24,535. Regulating and repaving with bituminous concrete pavement on concrete foundation the roadway of Brighton ave, and on the present macadam foundation roadway of Brook st.: Uvalde Asphalt Paving Co., 1 Broadway, \$15,834; Barber

Asphalt Paving Co., 30 Church st., \$16,675; Standard Bitulithic Co., 30 Church st., \$18,068.

Syracuse, N. Y.—Paving Brighton ave. with macadam and combined curb, John Young, macadam \$4,346.40, Hassam cement cone \$5,244.15; paving of Brighton ave. from S. Sajina st. to the lands of the D. L. & W. R. R. track with uniform pavement, stone curb, F. G. Baker, Jamestown block \$6,522.70, Trinidad asphalt \$6,414.70; John Young, macadam, \$4,729.40; paving Landon ave., Hassam cement cover, \$7,525.75; F. G. Baker, Jamestown block, \$9,443.70, Trinidad asphalt \$9,285.70; Central City Paving Co.; Mack Brick, \$9,384.25; Trinidad asphalt, \$9,226.25; Warner-Quinlan Co., Pennsylvania clay \$9,305.75, Trinidad asphalt \$9,116.15; sidewalk on south side of Warner ave., Eagle Paving Co., \$83.70; James G. Bonn, \$82.54; Thomas Albanea, \$93; sidewalk on north side of Hawley ave., Eagle Paving Co., \$133; James G. Bonn, \$140; Thomas Albanea, \$126.

Hamilton, O.—Improvement of Venice rd., all bids rejected: Writz & Trunk, Water bound macadam, \$16,238.36; Tarvia macadam, \$18,459.63; bids on Standard Oil asphalt macadam and Carbo-Via were the same as on Tarvia. Horace Shields, Water bound macadam, \$16,285; Tarvia macadam, \$18,500; bids on Standard Oil asphalt macadam and Carbo-Via were the same as on Tarvia.

Armore, Okla.—Paving: Shelby Downward lowest bidder, rock asphalt, Eleventh st., \$2,179.91; Central ave., \$9,131.88; Seventh st., Stonewall to Lottie, \$9,584.97; Dewey and other avenues, \$19,152.42; Noble ave., \$6,174.21; First st., \$46,131.50; Seventh st., Walker to Lee, \$6,424.52; Lee ave., \$7,615.71; Central ave., Fourth to Second sts., \$4,937.71; Walnut ave., \$16,657.21; Twelfth st., \$2,544.14; Western Paving Co., sheet asphalt, Avenue B, \$44,846.65; Ninth st., \$44,714.72; Avenue A, \$142,873.36; Twenty-sixth st., \$8,882.72; Thirty-seventh and Thirtieth st., \$52,815.48; Main st., \$33,610.18; Twenty-fourth and other streets, \$21,947.88; Thirty-ninth st., \$20,053.23; Thirtieth st., \$4,268.69; F. P. McCormick, sheet asphalt, Linwood boulevard, \$76,252.21; Agnew st., \$16,766.53; Cleveland Trinidad Co., sheet asphalt, First st., Western to Pennsylvania ave., \$45,582.30; Potawatomie ave., \$4,827.70; Linwood boulevard, Tenth to Sixteenth sts. and Young's boulevard, no bidders; total cost estimated by City Engineer W. C. Burke, \$984,937.33.

Kittanning, Pa.—About 17,260 sq. yds. brick and 23,050 sq. yds. bituminous macadam pvt. and 25,900 lin. ft. concrete curbing on Freeport and Kittanning road, South Buffalo Township, Armstrong County: John Schaffner, Butler, 9 bids on different kinds of paving ranging from \$39,708 to \$41,556; Ridge Bros. Co., Pittsburgh, 18 bids, from \$40,156 to \$57,200; H. G. Hinkle, Inc., Altoona, 9 bids, \$35,992 to \$55,711; Rinehard Bros., East Liverpool, O., 6 bids, \$33,625 to \$42,680; South Shore Constr. Co., Erie, 18 bids, \$44,300 to \$47,670; McLaughlin Constr. Co., Pittsburgh, 8 bids, \$30,111 to \$48,328, and Frank D. Baker and Chas. A. Owens, Johnstown, 5 bids, \$51,437 to \$71,678.

Dallas, Tex.—Paving Haskell ave and S. Harwood st.: Texas Bitulithic Co., for 5-in. gravel concrete foundation, bitulithic surface, Mineral Wells stone finish, \$2.22 per sq. yd.; Arkansas trap rock finish, \$2.36, Llano granite, \$2.41, without maintenance, adding 8c. to each of these for 5-year maintenance; for bituminous base the bid is the same; for Coffeyville brick, \$2.75, without maintenance, and \$2.85 with 5-year maintenance; for both streets the bid was the same. Steven Construction Co., 5-in. gravel concrete base, vitrified brick, \$2.60 per sq. yd. without maintenance, \$2.65 with 5-year maintenance; rock asphalt, \$2.16 without maintenance, and \$2.20 with 5-year guarantee; asphalt concrete, \$2.15 without maintenance and \$2.20 with 5-year guarantee. Furnishing 50 standard inlets for the water mains, J. M. Reichenstein & Co., \$425, and Hardwick-Abbott Manufacturing Co., \$375.

SEWERAGE

Arkadelphia, Ark.—Council has decided to construct sewer system; cost about \$35,000.

Little Rock, Ark.—The Board of Public Affairs has decided to advertise for bids for construction of storm sewer in Main st.—Frank Olive, Secretary.

Manford, Cal.—Trustees have selected C. P. Jensen to prepare specifications and estimates for sewer in N. Irwin st., with laterals and sedimentation tank, at sewer farm; cost about \$26,000.

Los Gatos, Cal.—Resolutions have been adopted for construction of sewer on Saratoga ave.

Modesto, Cal.—Bids will be received Oct. 12 for \$65,000 sewer bonds.—W. O. Thompson, Clerk Board of City Trustees.

Roseville, Cal.—City has sold \$78,500 bonds to be used for construction of a sewer system.—J. H. Stineman, City Clerk; U. S. Marshall, Engineer.

Santa Cruz, Cal.—Council has adopted resolutions to construct sewer at Soquel ave. and Front st.; also in portion of Emmet and Court sts.—C. E. Greenfield, Superintendent of Streets.

Winters, Cal.—Election on bonds to install \$25,000 sewer system is being considered.

Bristol, Conn.—Sewer system will be extended on Park and Tulip sts.

Wilmington, Del.—Cost of proposed sewers has been estimated by Board of Street and Sewer Directors at \$60,000.

Wilmington, Del.—Council has appropriated \$30,000 for construction of trunk sewers in Ninth Ward.

Atlanta, Ga.—Contracts will soon be let for construction of the proposed sewage disposal plants.—R. M. Clayton, City Engineer.

Rome, Ga.—Citizens will vote Nov. 8 on \$50,000 bonds for improving sewer system.

East Moline, Ill.—Board of Local Improvements has decided to accept estimate furnished by City Engineer H. G. Paddock on proposed extension of the sewer system; estimated cost \$50,000; length seven miles.

Argos, Ind.—Election will soon be held on construction of sewer system.

Evansville, Ind.—Board of Public Works has ordered construction of sewer on Oregon st.

Oakland City, Ind.—Sewerage system in city is under consideration of Town Board; cost \$50,000.

Belle Plains, Ia.—Council has selected Engineer Hart, Clinton, to make surveys for sewer outlet for proposed sanitary sewer system; plans have been completed for sanitary sewer system.

Charles City, Ia.—Bids will be received Oct. 17 for \$20,000 sewer bonds.—John S. Bradley, City Clerk.

Westernport, Md.—Citizens have voted \$10,000 bonds for sewerage system.

Lowell, Mass.—Relaying of Gorham st. sewer is being considered; cost \$2,000.

Detroit, Mich.—Council instructed board of Public Works, J. J. Haarer, Commissioner, to advertise for bids for furnishing all labor and materials for constructing remainder of sewers.

Gilbert, Minn.—Citizens have voted \$20,000 bonds to install sewage system.

Bozeman, Mont.—Council has decided to construct portion of District Sewer No. 31 at cost of \$2,893.75.—A. M. Brandenburg, City Clerk.

Mount Holly, N. J.—Citizens will soon vote on \$60,000 bonds to erect sewage disposal plant.

Newark, N. J.—Board of Works has asked for additional appropriation of \$15,000 to carry on necessary work of the sewer department and to proceed with dredging of meadow ditches that constitute the outlets of storm water sewers of lower section of city.

Newark, N. J.—Board of Works has adopted an ordinance providing for construction of storm water sewer.

South Amboy, N. J.—Citizens will again vote on \$10,000 bonds to construct general system of sanitary sewers.

Yorkville, N. Y.—Citizens will vote Oct. 8 to build sewer system for the village; plans for proposed sewers have been approved by State Board of Health. Cost, \$22,000.

Yorkville, N. Y.—State Department of Health has approved the plans of W. G. Stone, Utica, for sewage disposal plant.

Circleville, O.—City has sold \$4,800 Mill st. storm sewer bonds to Christian Wefel, city.

Delaware, O.—Sherman-Riggs Co., Engineers, Toledo, will prepare plans and specifications for sewage disposal plant.

Hubbard, O.—Engineer Wilson has prepared plans and profiles providing for sewer system covering entire village; same has been approved by State Board of Health.

Marysville, O.—State Board of Health of Ohio has ordered city to proceed at once and have plans and specifications ready by Oct. 19 for construction of a sanitary sewerage system.

Salem, O.—Construction of sewage disposal plant to cost about \$150,000 is being considered.

Springfield, O.—Citizens will vote in November on \$130,000 bonds for construction of low level sewer in Buck Creek Valley.

Sallisaw, Okla.—Citizens have voted \$45,000 bonds for sewers.—A. W. Bates, Engineer.

Baker City, Ore.—Council is considering construction of storm sewer in 2d st.

Beaver Falls, Pa.—Bids will be asked for survey for proposed sewage system.

Chester, Pa.—Council is considering construction of sewers on Parker and 9th sts.

Meadville, Pa.—Mayor Graff has recommended election Nov. 8 on \$43,800 bonds for storm sewers and \$4,500 bonds for permanent improvement on Neason Run.

West Chester Pa.—A. F. Damon, Special Engineer for proposed sewer and disposal plant, has completed plans.

Brownsville, Tex.—Mayor Kowalski is urging election on \$80,000 bonds for draining and paving streets.

Dallas, Tex.—Bids will be asked for lay-

ing 6-in. sanitary sewer on Colorado st. and two alleys.

Pecos, Tex.—Commercial Club is urging construction of sewer system.

Plano, Tex.—Citizens have voted \$8,000 sewerage bonds.

Vernon, Tex.—City proposes to expend \$12,000 for sewer work.—A. J. Robinson, Engineer.

Seattle, Wash.—Council has decided to construct sewers on 32d ave. N.; cost about \$20,200; also on Latonia ave. N., at cost of \$6,500.

Stoughton, Wis.—City is doing preliminary work for construction of sewer system; bonds will soon be sold.

CONTRACTS AWARDED

New Haven, Conn.—Sewer construction, to Dwyer & Mannux: Clinton ave., \$524; Morris st., \$1,358; Maltby and Grafton sts., \$1,147.50, and Chambers st., \$410.

Jacksonville, Fla.—To D. M. Baker for laying 1,200 or more ft. of terra cotta drain pipe on 8th st.

Moline, Ill.—To Chas. A. Berglund, for laying 3 miles of sewer pipe and 1½ miles of water mains in Fifth Ward, \$23,769.

Battle Creek, Ia.—Constructing sewer system, to C. C. Frie, Ida Grove, about \$5,600.

Waterloo, Ia.—Construction of sewers on Edwards and other streets to Dearborn & Jackson, Cedar Rapids, \$8,875.50.

Boston, Mass.—To Murphy & Dolan, for constructing sewer in Maynard st., \$4,347. Other bidders: Antony Cafalo, \$4,521; C. J. Jacobs Co., \$4,534; McCarthy & Walsh, \$4,571; Geo. J. Regan, \$4,713; Commonwealth Construction Co., \$5,065; E. F. Knelly, \$5,202; A. M. Cusack, \$5,390; Mark H. Lynch, \$6,431.—Louis K. Rourke, Superintendent of Streets.

Cloquet, Minn.—To the Pastoret-Lawrence Co., Duluth, for extension of sewer and water system.

Duluth, Minn.—Sanitary sewer in the alley between Greysolon pl. and Superior st., to Chas. Eklund, \$5,628.

Marble, Minn.—Constructing sewer and water works system, to H. V. Bartlett Co., Virginia, \$24,500.

Camden, N. J.—To W. W. Mines for sewers on Woodland ave. and Evered st.; to Aaron Ward for sewer on Princess ave.

Hudson, O.—To A. A. Dittrick, Cleveland, for proposed municipal sewage disposal plant.

Upper Sandusky, O.—Construction of Warpole sewer, to P. Drake & Sons, \$3,971.—C. H. Beansay, City Engineer.

Erie, Pa.—Sewers in 22d st. to Clemence Wolfrum, 1,040 ft., 9-in. pipe, \$1.08; 6-in., 40c.; to Andrew Dwyer, 300 ft., 9-in. pipe, \$1.05; 6-in., 40c.

El Paso, Tex.—Construction of sewer and garbage disposal plant; sections 1 and 3 to Sorrenson & Morgan, \$26,980 and \$31,344; section 2 to W. E. Anderson, \$36,000.—C. W. Fassett, City Clerk.

Spokane, Wash.—To Kennedy & Fife Bros., for big Fifth Ward trunk sewer, \$467,000.

Huntington, W. Va.—Sewer between 11th and 12th aves. and east from 16th st., to Jack Uulom.

West Allis, Wis.—To L. W. Schruth, Fargo, N. D., for constructing 24,480 ft. of pipe sewers at the following bid: 8-in. sewer per lin. ft., \$1; 10-in., \$1.25; 12-in., \$1.38; 15-in., double strength, \$1.58; 18-in., double strength, \$2.30, and 6-in. pipe, 40c.

Trenton, Ont., Can.—To Geo. Crow & Sons, Trenton, for constructing sedimentation tank 3,245 ft., 15, 12 and 8-in. sewers, about \$4,215.

BIDS RECEIVED

Michigan City, Ind.—Sewer in Buffalo st., W. H. Bell & Co.: 10-in. pipe, 70c. per lin. ft.; 12-in. pipe, 71c.; August Schneider, 10 and 12-in. pipe, each 72½c. per lin. ft.

Atlantic City, N. J.—Jersey Paving Corporation, J. M. Schreiber, 127 Frelinghuysen ave., Newark, lowest bidder, \$502,996.15, for installation of huge drainage conduit on westerly side of the resort, which city engineers estimated would cost \$900,000. Other bidders were MacArthur Brothers Co., New York, \$830,319.90; United Paving Co., Atlantic City, \$891,962.11; Edward L. Fader, Atlantic City, \$915,643; Nelson, Mervith Co., Chambersburg, Pa., \$989,972.32; Metropolitan-Whiting-Middleton Co., Baltimore, part of contract, \$738,938.82; for this part of the work Newark concern bid \$415,256, and next lowest bidder, \$709,967.

Syracuse, N. Y.—Pipe sewer in Stolp, Hubbard and Gordon aves., A. Gaffey, \$2,832; C. T. Hookway, \$2,944.50; Nicholas Marnell, informal; J. W. Davin, Jr., \$2,666.75; A. Sposato, \$2,243.50; Samuel Bonn, \$3,217.20; Alexander Bonn, \$2,715.50; James Swift, \$3,326.25; 15-in. pipe sewer in Raynor st., A. Sposato, \$879.65; A. Gaffey, \$1,133.50; Samuel Bonn, \$1,409; C. T. Hookway, \$897; Phillip Thomas, \$839.25; F. A. Soosato, \$1,050.50; Charles Bonn, \$1,061.90; Nicholas Marnell, \$1,056.50; J. W. Davin, Jr., \$877.50;

James Swift, \$1,053.50; bids also received for number of smaller sewers.

Dallas, Tex.—Laying 6-in. sanitary sewer in Caruth st.: Dallas Lime & Gravel Co., \$184.90, with 20c. a ft. for rock excavation and \$12 for bench work; Dallas Home Improvement Co., 39c. to 55c. lin. ft., according to depth, with 20c. ft. for rock trench and \$12.50 for bench.

WATER SUPPLY

Booz, Ala.—Citizens will vote Oct. 31 on \$20,000 bonds to install water works plant.

Opelika, Ala.—City will take over water works plant; dam will be built across Ross Creek and electric motor installed.

Covina, Cal.—Installation of water system is being considered by Board of Trustees.

Modesto, Cal.—Bids will be received Oct. 12 for \$15,000 water works, \$65,000 sewer and \$10,000 street work improvement bonds.—W. O. Thompson, Clerk Board of City Trustees.

Morgan Hill, Cal.—Election on \$20,000 bonds for water and light is being urged.

Montague, Cal.—Trustees are planning a municipal water supply.

Sison, Cal.—City Engineer Harvey J. Sarter has completed plans for water works and sewer system.

Putnam, Conn.—Citizens have voted that city should own its own water works and supply.

Waterbury, Conn.—Board of Works has ordered immediate purchase of 1,000,000-gal. pump.—R. A. Cairns, City Engineer.

New Castle, Del.—Cost of proposed street improvements has been estimated at \$30,000.

Ft. Meyers, Fla.—Town proposes to construct water works.—W. L. Long, Town Clerk.

Rome, Ga.—Citizens will vote Nov. 8 on \$75,000 bonds for water works improvements.

Chicago Heights, Ill.—Council has authorized awarding of contracts for electrical and other equipment for water works plant at cost of approximately \$18,000.

Springfield, Ill.—Plans and specifications will soon be prepared by City Engineer Frank Hamilton for the necessary improvements of the water works.

Charles City, Ia.—Bids will be received Oct. 17 by Council for \$20,000 water and \$20,000 sewer bonds.—John S. Bradley, City Clerk.

Tsouix City, Ia.—Bids have been rejected for Greenville deep well and pumping station.

Anthony, Kan.—Citizens' Improvement Co. will improve water system; plans by Engineer Worley, of Kansas City.

Monroe, La.—Council has decided to lay 10-in. water main from pumps on river front to plant.

Patterson, La.—City will issue \$50,000 water works bonds.

Westernport, Md.—Citizens have voted \$75,000 bonds for water works.

Lynn, Mass.—Geo. W. Fuller has estimated cost of proposed mechanical filtration plant, including engineering services, at \$225,000.

Chisholm, Minn.—Annual budget of Water, Light, Power and Building Commission contains \$16,000 for pumping station at filter plant, \$12,000 for new water mains, \$10,000 for new work and machinery and \$12,000 for miscellaneous purposes.

Watertown, Minn.—Need of new pumps and improvements for water works is being considered.

Cary, Miss.—Company has been formed by T. H. Powers, B. Goodman and W. P. Dawson, capital \$15,000, to construct water works.

Clinton, Miss.—City is considering sinking artesian well; spring supply giving out.

Lewiston, Mont.—Citizens will again vote on \$75,000 bonds to install water works.

Superior, Neb.—Citizens have voted \$20,000 water bonds.

Angola, N. Y.—Taxpayers have voted to construct water works system at cost of \$55,000; bids will be received by the Village Clerk.

Belmont, N. Y.—Board of Trustees has sold \$3,000 bonds for the purpose of extending the water works system.

Franklin, N. C.—Citizens will vote Oct. 17 on \$24,000 bonds for installation of water system.—F. L. Siller, Mayor.

Grand Forks, N. D.—Plans have been prepared for installation of entirely new filtering system; cost \$20,000.

Mt. Airy, O.—Citizens have defeated proposition to issue \$12,500 bonds to purchase water pipes and make connection with Cincinnati mains.

New Carlisle, O.—Village has voted to install \$20,000 water works system.

Rockport, O.—Bids will be received Oct. 15 for \$15,000 water works bonds.—Fred Feuchter, Village Clerk.

Springfield, O.—Council has decided to construct 20-in. water main from the pumping station to the old pumping house grounds at cost of \$20,000.

West Covington, O.—Plans have been prepared for proposed water system; election will be held in November.

Allen, Okla.—Citizens will vote Oct. 21 on \$25,000 water works bonds.

Eldorado, Okla.—Citizens have voted \$15,000 bonds to drill deep wells and furnish water supply.

Enid, Okla.—Plans have been completed for proposed water plant. Address Commissioner Hitchcock.

Hobart, Okla.—Citizens will vote on \$15,000 of bonds for drilling six additional shallow wells, installing motor to operate pumps and laying pipe line to settling basin in order to secure increased water supply.

Salisbury, Okla.—Citizens have voted \$16,000 bonds for extension of water and electric light service.—A. W. Bates, Engineer.

Brookville, Pa.—Brookville Water Co. has decided to construct a filtration plant.

York, Pa.—Installation of municipal water works is being urged.—Rev. J. J. Stauffer, Chairman Special Committee.

Warren, R. I.—Installation of filtration plant, cost of from \$8,000 to \$40,000, is being urged.

Gettysburg, S. D.—Tuttle & Pike, Kansas City, Mo., are preparing plans for proposed water system.

Chattanooga, Tenn.—City can build water works plant of its own, of capacity one-half greater than the one now in use, at cost of \$1,522,220, according to report of Walter G. Kirkpatrick, water works expert, employed by city to prepare estimate with plans and specifications of municipal plant.

Germantown, Tenn.—City is planning to install a water works system and to lay several blocks of concrete walks.

Brownsville, Tex.—Mayor Kowalski is urging election on \$50,000 bonds for extension of water mains, more street lights and addition to market hall.

Dawson, Tex.—Citizens have voted \$8,000 bonds to erect complete water system; bids will be asked for at once.

Fort Worth, Tex.—City Commissioners have decided to lay 8-in. water main on St. Louis ave.

Hearne, Tex.—City is considering construction of water works.

Lueders, Tex.—Lueders Water Supply Co. will construct dam across Cottonwood Creek where it empties into Clear Fork of Brazos River, giving supply of about 700,000,000 gals. of water for Lueders and nearby cities.—C. H. King, President.

McKinney, Tex.—Council has authorized Water Committee to advertise for bids for sinking of another deep well, to augment water supply; size to be left to the discretion of committee.

Plano, Tex.—Citizens have voted \$1,500 water works bonds.

San Augustine, Tex.—Citizens will vote October 18 on \$25,000 water works bonds.

Taylor, Tex.—Taylor Water Co. is considering construction of reservoir.—H. A. Bittick, Manager.

Ephraim, Utah.—R. E. Caldwell, Salt Lake City, has been selected to prepare plans for proposed water works.

Cambridge, Vt.—Village will again vote on proposition to expend \$15,000 for water supply.

Portsmouth, Va.—Citizens will vote on bonds for water works.—V. O. Cassell, Jr., City Engineer.

Vancouver, Wash.—Citizens will vote on installation of \$315,000 water system.

Fairmont, W. Va.—City will purchase 13,600 lin. ft. of 10 and 12-in. c.-l. pipe for improvement of city water system.—S. B. Miller, City Engineer.

North Fond du Lac, Wis.—Special election may be held in future to authorize bonding of the village for \$30,000 for purchase of the plant of Sand Rock Water Co.

Superior, Wis.—Superior Water, Light and Power Co. proposes to expend about \$150,000 next season in enlarging its pumping station and in laying a new pipe line.—W. H. Winslow, General Manager.

Gleichen, Alta., Can.—R. B. Owens, Provincial Health Engineer, has been consulted in regard to proposed system of water works.

New Glasgow, N. S., Can.—Plans have been completed for construction of water works.—Jas. Roy, Town Clerk.

Welland, Ont., Can.—Bids will be received by Board of Water Commissioners for 2,000 lin. ft. 6-in., 2,900 lin. ft. 14-in. c.-l. water pipe and specials; also 300 ft. 14-in. flexible pipe for crossing canal.

CONTRACTS AWARDED

Conway, Ark.—To Joseph McCoppin, for furnishing material and constructing water works, \$56,876.

San Francisco, Cal.—To Foster & Vogt, for hauling and laying pipe for auxiliary water system in district bounded by Van Ness ave., Market st., Powell st. and bay, \$102,809.

New Iberia, La.—Supplying necessary pipe for coupling up Smithville Underwrit-

ers' pump, to A. F. Landry, representing General Fire Extinguisher Co., New Orleans.

Connersville, Ind.—Constructing complete pumping station for water works, to Stoops, Hinds & Neal & Stoll, Connersville, reservoir, pumping station, dismantling and removing and re-erecting old machinery, etc., laying water pipe, laying by-passes and erecting of buildings for booster station and well houses, \$22,280; to Wm. Fox, Connersville, for furnishing material and drilling of wells, \$890; to General Electric Co., Schenectady, N. Y., furnishing vertical electric motors and turbo generator, condenser, etc., \$7,090; to Cooper-Hewitt Co., Louisville, Ky., furnishing electro-centrifugal unit for booster station, \$62; to Brownell Co., Dayton, O., furnishing tubular boiler, etc., \$538; to Roth Mfg. Co., Indianapolis, Ind., furnishing Columbus deep well impeller pumps, \$2,125.

Grand Rapids, Mich.—Constructing basins and substructures of buildings for filtration plant, from plans of Hering & Fuller, 170 Broadway, New York, N. Y., to A. H. Prange, as follows: 34,000 cu. yds. general earth excavation, 58c.; 100 cu. yds. earth excavation from cylinders, \$2; 1,200 cu. yds. earth excavation below grade, \$1; 1,200 cu. yds. selected earth fill, 40c.; 10,000 cu. yds. earth embankment, 25c.; 500 cu. yds. rock excavation, \$2.50; 2 acres, seeding, \$12; 100 sq. yds. sodding, 40c.; 100 cu. yds. concrete masonry in piers of headhouse foundations, \$7; 7,400 cu. yds. concrete masonry, general, \$9; 800 sq. yds. surfacing of concrete floors, 30c.; 275,000 lbs. steel reinforcement, \$50; 86 tons straight c.-i. pipe, bell and spigot, \$35; 25 tons c.-i. pipe specials, bell and spigot, \$75; 23 tons c.-i. pipe specials, flanged, \$80; 16,000 lbs. miscellaneous cast-iron work, \$60; 40,000 lbs. miscellaneous wrought-iron and steel work, 3c.; 300 lin. ft. 8-in. vit. pipe lines, 35c.; 80 lin. ft. 6-in. vit. pipe lines, 25c.; 40 lin. ft. 4-in. vit. pipe lines, 20c.; 2,400 sq. yds. vit. brick pavement, \$1.80; 1,400 lin. ft. concrete curb, straight, 40c.; 300 lin. ft. concrete curb, curved, 50c.; total, including gates and valves, \$123,842; totals of other bidders: J. P. Rusche, \$147,227; Carpenter & Anderson, \$159,126; the Kaps-Brehm Co., \$151,348; American Eng. and Construction Co., \$149,069; A. Bently & Sons Co., \$135,239; estimate, \$135,221.

Cloquet, Minn.—To the Pastoret-Lawrence Co., Duluth, for extension of water and sewer system.

Kansas City, Mo.—To Farney & Baker, Kansas City, at \$90,005, to construct 8,000 ft. of revetment on east side of Missouri River to prevent water from flowing away from water intake at Quindaro, Kan.—E. B. Harrington, Secretary.

Roslyn, L. I., N. Y.—Furnishing and laying water mains and setting hydrants for \$60,000, to W. G. Fritz, Dover, N. J.; for furnishing hydrants and valves, to Fairbanks & Co., New York, \$4,090; for furnishing pumps, to the Platt Iron Works, \$3,130; for construction of pump house and office, to John H. Lambert, Roslyn, \$8,739; contract for engine and gas producer was not awarded, as Water Commissioners, John F. Remsen, Chairman, are to personally inspect different styles and makes before making award.

Windsor Beach, N. Y.—Building 4, 6 and 8-in. steel water pipes for distributing main, to F. I. Le Valley, Sr., Lockport; contract originally let Jan. 1, but held up to permit of easement being obtained by town of Irondequoit.

Erie, Pa.—Constructing cement sides and bottom for No. 1 settling basin on peninsula, to the Gillespie Co., \$77,315.

Harrisburg, Pa.—High service power reservoir on Oak Knob, Reservoir Park, to Wm. S. Miller, \$17,705; original bid before changes in specifications, \$21,105.

Saegerstown, Pa.—To Fred Yunker, Mayfield, for drilling wells in connection with proposed water works system; citizens have voted \$13,000 bonds.

Waterloo, Wis.—Laying approximately 18,000 lin. ft. 4, 6, 8 and 10-in. mains, setting five hydrants, valves and valve boxes, from plans of Jas. H. Thompson, 324 Dearborn st., Chicago, Ill., to F. E. Kaminski, Watertown, \$7,554; other bidders, F. C. Robinson, Manitowoc, \$8,171; Jas. McCabe, Fond du Lac, \$8,220; Advance Construction Co., Waukesha, \$7,342; Lanyon & Clifford, Co., Waukegan, Ill., \$8,077; John T. Blake, Madison, \$7,979; John M. Healy Co., Chicago, \$7,695; H. F. Pearce, Ironwood, Mich., \$8,761; O'Donnell Bros., Milwaukee, \$8,818.—P. E. Peschel, Village Clerk.

London, Ont., Can.—Electrical equipment at Springbank pumping plant; turbines to the John McDougall Iron Works Co.; motors, to Canadian Westinghouse Co.; transformers, to Allis-Chalmers-Bullock Co., and switchboard equipment, to Siemens Bros.

Bangkok, Siam.—Pipes and accessories for city water supply, to Société Anonyme des Hauts Fourneaux et Fonderies de Pont-a-Mousson, France, handled by M. Philibert, c.-i. pipes, \$32.85 per ton; joint bolts,

\$9.27 per kelos, 2 1-3 lbs.; rubber rings, \$295; two other bidders conforming to specifications.

BIDS RECEIVED

Louisville, Ky.—Construction of proposed intake tower in river opposite the pumping station of Louisville Water Co.: Mansfield Engineering Co., Indianapolis, \$98,850, complete work Oct. 1, 1911; Henry Bickel Co., city, \$105,950, complete work July 1, 1911; American Engineering and Construction Co., Chicago, \$69,800, complete work Aug. 1, 1911; National Concrete Construction Co., city, \$83,088.41, complete work July 1, 1911.

Lowell, Mass.—Pumping engine for Central pumping station, William Tod Co., lowest bidder, \$39,900; Allis-Chalmers Co., \$40,700; Hooven, Owens & Rentschler Co.'s bid, \$41,000, and the Holly Manufacturing Co., \$41,769; Platt Iron Works submitted two propositions, one for \$42,000 and the other for \$41,000; Bethlehem Steel Co., \$51,769; Tod pump can be delivered in nine months and Allis-Chalmers in five months; the Hooven, Owens & Rentschler Co. would need 12 months, and the Holly Co. asked nine months on each of its propositions; Bethlehem Steel Co. wanted eight months; pumps vary in weight; the Allis-Chalmers pump weighing nearly 500,000 lbs., while most of the others were around the 400,000 lbs. mark; bids do not include the tearing out of foundations and building of new ones, the making of connections, etc.

New York, N. Y.—Hauling and laying water mains and appurtenances and removing existing water mains in Franklin, Hegeman and New Lots aves.: Haggerty & Drummond, \$9,637; Henry E. Fox, \$9,760; Robert Garter, \$9,914; S. Amanna, \$14,160; Soracci Contracting Co., \$11,200; Julius Dragonetti, \$12,001; Leo E. Kelly, \$10,587; Nelson & Dowling, \$16,163; A. B. Nichols, \$22,568; Newman & Carey, 215 Montague St., Brooklyn, \$8,917.

Harrisburg, Pa.—Proposed 1,000,000-gal. high service reservoir at Reservoir Park, Wm. H. Opperman, \$28,000; J. N. Bastress & Co., \$26,400; with stone or gravel concrete sides, \$25,600; with crushed stone concrete, \$24,100; William S. Miller, \$22,430; with crushed stone concrete, \$21,105.

Dallas, Tex.—Furnishing 600 tons of water pipe from 6 to 16 in.: Dimmick Pipe Co., \$25.80 for pipe, all sizes, and \$49.75 for specials, delivered at Dallas; United States Cast Iron Pipe & Foundry Co., \$26.45 for pipe from 6 to 8 in., \$26.25 for 10 to 16-in., and \$50 for specials; R. D. Wood & Co., by Hardy Greenwood of Dallas, \$26.90 for pipe of all sizes, and \$52.90 for the specials; it was stipulated in the bid that if, on Oct. 11, the city's petition for reduction of freight shall be granted reduction of \$1.80 a ton on bid will be allowed; reduced bid will be \$25.10 for the pipe and \$51.10 for the specials; American Cast Iron Pipe Co., \$26 per ton for pipe, all sizes, and \$50 for specials; Sheffield Cast Iron Pipe & Foundry Co., \$27.25 for pipe, all sizes, and \$53 for specials.

Dallas, Tex.—Clearing the timber from White Rock reservoir site, Edwards & Gray, \$22.50 per acre; D. J. Grigsby, \$26; Newcomb & Wylie, \$16.85; Taylor & Akers, \$20; Duke & Long, \$15.

Watertown, Wis.—Laying 200 ft. of 4-in. and 650 ft. of 6-in. water pipe, Otto Biefeld & Co., \$1.12 and \$1.29 per ft.; William Schiebel, \$1.12½ and \$1.37.

LIGHTING AND POWER

Albertville, Ala.—Board of Mayor and Aldermen has extended the franchise of lighting plant until Jan. 1, 1911; stockholders of San Mountain Electric Co. intend to buy some new machinery.

Montgomery, Ala.—Montgomery Traction Co. will, it is reported, erect power house.

Morgan Hill, Cal.—Election on \$20,000 bonds for light and water is being considered.

Paradise, Cal.—W. H. Hanscom has filed appropriation on 1,500 in. of water in Big Chico Creek, to furnish power to this place; water will be diverted by masonry dam and conveyed to power plant site by flume and ditch.

Richmond, Cal.—Board of County Supervisors has granted Richmond Light and Power Co. a franchise to erect transmission lines along public highways.

Whittier, Cal.—Southern California Edison Co., Los Angeles, has decided to extend its power lines to East Whittier, to supply light and power to various oil fields.

Gainesville, Ga.—Blue Ridge Power Co. has been incorporated, with \$50,000 capital stock by William A. Carlisle and others to build water power electrical plant on Chattooga River.

Eaton, Ind.—American Gas and Electric Co., of which the Muncie Electric Light Co. is a constituent, has made proposal to Town Council that latter award company a lighting and power franchise.

Indianapolis, Ind.—Because he believes

bids submitted by vapor lighting companies are too high, City Engineer Klausmann expects to take up with Board of Public Works the question of a system of incandescent street lights to be used where he had expected to place vapor lights.

Ontario, Ind.—Riverside Electric Co. is planning to build and equip electric light and power plant.—W. H. Cain, President.

Bode, Ia.—The Bode Heat, Light and Power Co. has been incorporated, capital \$10,000, by L. L. Kinsel, N. A. Nasby and others.

Midway, Ky.—Citizens will vote in November on \$6,000 bonds to erect plant for lighting streets and public blocks of city.

Unice, La.—Mayor R. Lafleur has recommended to Town Council that election be called on proposition to sell municipal water plant to company that will install electric lighting plant in connection.

Baltimore, Md.—The Public Service Commission has approved franchise of Susquehanna Transmission Co. to construct its poles, wires and conduits in Baltimore County for the purpose of bringing electricity from Susquehanna River to Baltimore.

Centreville, Md.—Dr. Homer J. Smith, Camden, Del., President of the National Light and Power Co., Cleveland, O., has been granted a franchise by Town Commissioners to install gas plant.

Springfield, Mass.—Street Lighting Committee will make four-day trip through cities in Middle West, where most modern methods of lighting city streets will be inspected.

Detroit, Mich.—Architects Smith, Hinckman & Grylls are preparing plans for construction of addition to municipal power plant.

Chisholm, Minn.—Installation of municipal electric light plant is being urged.

Fairmont, Minn.—Citizens have voted \$30,000 for improvements and extensions to municipal electric light plant.

Fergus Falls, Minn.—Council has adopted resolution authorizing the Water and Electric Light Commission to build electric light plant.

Starbuck, Minn.—Village desires prices on a 50-h.p. or 55-h.p. Corliss engine and boiler, complete, for municipal light and water plant.—A. H. Dreyes, Superintendent.

Bozeman, Mont.—Citizens have granted Dr. Carl Schroeter and J. C. McCarthy franchise to install gas plant; cost \$100,000.

Chadron, Neb.—Messrs. Kass and Klingaman, new proprietors of the Chadron Electric Light and Power Co., will reorganize and improve entire plant.

Avon, N. Y.—The Avon Electric Co. has petitioned Public Service Commission for permission to extend electric lines of the company from Lakeville to Geneseo or from Long Point to Lake Conesus to Geneseo, a distance of about 7 miles.

Asheville, N. C.—The Weaver Power Co. is preparing to build transmission lines to Canton.—S. A. Johnson, Superintendent.

Youngstown, O.—At a cost of \$35,450, and an annual maintenance expense of \$6,625, an electric light plant can be installed in city to light proposed new street lighting system of 150 pedestals.

Sallisaw, Okla.—Citizens have voted \$16,000 bonds for extension of electric light and water service.—A. W. Bates, Engineer.

Woodward, Okla.—Citizens have voted \$30,000 bonds for electric light plant.

Doyleson, Pa.—Electric Co. will rebuild portion of its plant at cost of about \$2,000.

Walhalla, S. C.—City will install water wheel generator, etc.—Geo. L. Wilson, Mayor.

Brownsville, Tex.—Mayor Kowalski is urging election on bonds for more street lights.

Clarksville, Tex.—Power house of Clarksville Light & Power Co. destroyed by fire; city without light.

Coleman, Tex.—Bids will be received for \$20,000 electric light bonds.—F. A. Dibrell, City Secretary.

Fort Worth, Tex.—Commissioner Powell will recommend additional lights; Electrician Crabtree has estimated that 250 additional arc lamps and 800 75-watt tungsten lights should be installed.

San Marcos, Tex.—San Marcos Utilities Co. will improve and extend distributing system of electric light and power plant; also overhaul engine.—W. G. Barber, 119 Guadalupe st., President.

Waco, Tex.—P. A. Gorman, Street Commissioner, is interested in proposed construction of electric light plant.

Ogden, Utah.—Utah Light and Railway Co. will build substation on 23d st.

Elma, Wash.—The Olympic Railway and Power Co. has been incorporated, capital \$3,000,000, by M. H. Lynch, D. E. Servis and others, to furnish manufacturing plants with electric power.

Summersville, W. Va.—W. H. Campbell has applied to Nicholas County Court for 20-year franchise to construct system furnishing city with electric light and power.

CONTRACTS AWARDED

Thibodaux, La.—Supplying parts of municipal electric light plant; to George W. Ketriham, for building one-story brick, \$4,950; to Dressel Engine Co., St. Louis, engines, \$22,000; to Fort Wayne Electrical Works, pumps, \$7,125.25; to A. C. Jones, Opelousas, poles, \$3,549; to Fort Wayne Electrical Works, wiring, \$1,012.55; to Lawrence Pump and Engine Works, \$2,061.50.

Auburn, Me.—To Lewiston and Auburn Electric Light Co., for lighting streets for a period of five years, \$55 per lamp per year.—Harry Edgcomb, Chief Engineer.

Swampscott, Mass.—Lighting the streets for five years, to Lynn Gas and Electric Co., only bidders; figures contained in the contract were: Arc lights, first year, \$73 each; second year, \$72.50 each; third year, \$72 each; fourth year, \$71.50 each; fifth year, \$71.50 each; incandescent lights, \$17.50 each per year; contract based upon service of 90 arc lights and 1,200 candlepower each, and 120 incandescent lights of 36 candlepower each.

Alexandria, Minn.—To A. L. Ide & Sons, Chicago, Ill., for installation of second unit at the electric light plant, about \$4,300.

Hudson, O.—To Philip Schmid, of Youngstown, for constructing the proposed municipal power plant.

Huntington, W. Va.—Furnishing carbons for street lights for coming year, to National Carbon Co., Cleveland.

Medicine Hat, Alta., Can.—Supply of gas engines and generators for electric light and power plant, to Chapman & Walker, Toronto, Crossley gas engines and generators, \$25,000.

Victoria, B. C., Can.—Supplying 2,500 lbs. of copper wire required by city, to Drake & Hawkins, \$18 per 100 lbs.

Port Credit, Ont., Can.—By Hydroelectric Commission for the substation to supply Brampton, Milton and other municipalities which have applied for power; building to Stewart Bros., Port Credit; to the Allis-Chalmers-Bullock Co., of Montreal, to supply transformers; switching equipment will be installed by the Canadian Westinghouse Co., of Hamilton.

BIDS RECEIVED

Medicine Hat, Alta., Can.—Two direct connected gas engine driven 125-kw. alternating current units for the power plant were received: E. Leonard & Sons, engines \$13,974, generators \$11,100; Kilmer, Pullen & Burnham (1) engines \$14,500, generators \$8,776, (2) engines \$17,500, generators \$8,776; Siemens Bros., (1) engines \$14,005, generators \$4,255, (2) engines \$17,500, generators \$4,255; Allis-Chalmers-Bullock, Ltd., engines and generators \$24,215; Canadian Westinghouse Co., engines \$20,600, generators \$5,690; Canadian Boving Co. (1) engines \$14,500, generators \$4,255, (2) engines \$17,500, generators \$4,255; Vandeleur & Nicholls, (1) engines \$14,500, generators \$3,050, (2) engines \$17,500, generators \$3,200; Gorman, Clancy, Grindley, generator \$5,675; Canada Foundry Co., engine and generators \$21,050; Canadian Fairbanks Co., engine \$13,922, generators \$5,903; National Meter Co., engines \$13,495, generators \$6,500; Turner, Fricke, Pittsburgh, engines \$16,706.80, generators \$7,851; Chapman, Walker Co., engines \$17,060, generators \$5,630; Drummond, McCall & Co., engines \$13,500.—M. A. Maxwell, Consulting Engineer.

FIRE EQUIPMENT

Bessemer, Ala.—City will increase equipment of fire department.

Montgomery, Ala.—Auto will be purchased for use of Fire Chief Browder.

Marysville, Cal.—City will purchase another engine and other required equipment as soon as possible.

Hartford, Conn.—Erection of \$60,000 fire house on Front st. for Engine Co. No. 3.

La Porte, Ind.—Special committee has recommended erection of station and purchase of hose wagon and additional hose.

New Orleans, La.—Fire Chief O'Connor, regarding the need of fire protection for people at West End, has recommended that volunteer fire company be organized under control of the fire department, and gasoline fire engine with two wheel hose cart and 500 ft. of hose, cotton rubber lined, and other equipment be supplied.

Michigan City, Ind.—Bids will be received Oct. 10 by Council Clerk Heise for 1,000 ft. 2½-in. fire hose.

Baltimore, Md.—Two automobile hose wagons and automobile fire engine, aggregating \$16,000, are asked for by Fire Board.

Hyattsville, Md.—Town hall with room for fire department apparatus will be erected on Johnson ave.—Councilman Grearer, Chairman Building Committee.

Duluth, Minn.—Board of Fire Commissioners are asking that \$8,000 set for new fire hall at Lakeside be diverted toward purchase of automobile combination chemi-

cal and hose wagon and building in which to house it.

Kansas City, Mo.—City will at once purchase site for erection of four fire houses.

Sea Isle City, N. J.—Citizens have voted \$5,000 bonds for hose, carriage and other equipment. F. W. Fowkes is interested.

Nome, N. D.—City has issued \$4,500 bonds to build fire house, jail and hall.

Dunbar, Pa.—Purchase of engine is being considered.

Harrisburg, Pa.—Select Council has passed ordinance providing \$8,000 for construction of addition to Camp Curtin fire house.

Meadville, Pa.—Mayor Graff has recommended election Nov. 8 on \$2,000 bonds for Dick Hose Co.

Fairmont, W. Va.—Bids will be asked by Fire Committee for erection of portion of central fire station; cost \$5,000.

Portage, Wis.—Fire Chief Memeyer has recommended purchase of combination truck and 500 ft. of hose.

Ripon, Wis.—City will purchase 500 ft. of hose and outfit of oilskins for entire department.

Moose Jaw, Sask., Can.—Bids will be received Oct. 10, 8:30 p. m., for supplying one standard combination chemical and hose wagon with capacity 50 gals. chemical tank and 80 ft. of 2½-in. fire hose, or 40 gals. chemical tank and 1,000 ft. of 2½-in. fire hose; wagon to be fitted to carry one 20-ft. extension ladder on top; bidders are asked to quote prices for either 2½-in. steel or 2½-in. rubber tired Archibald wheels; also for one extra set of Archibald wheels, 1½-in. axle, 2½-in. steel or rubber tires.—W. H. Heal, City Clerk.

CONTRACTS AWARDED

Bessemer, Ala.—To Seagrave Co., Columbus, O., for hose and ladder fire wagon, with chemical apparatus attached, at cost of \$1,550.

Mishawaka, Ind.—Hose house at Main and Marion sts., to A. Grover, \$6,151.

Beaver Falls, Pa.—Furnishing 500 ft. of hose, to Chicago Fire Hose Co., \$1 per ft.

Glenolden, Pa.—Erection of fire house to Wm. F. North, \$4,362.

Richmond, Va.—To James Fox & Son, city, for erection of South Richmond engine house, \$10,548; plans by Carneal & Johnson,

BIDS RECEIVED

Montgomery, Ala.—Increase to fire apparatus of the city. Webb Fire Apparatus, \$8,500 for first-size auto steamer, and \$7,500 for second-size auto steamer; Autofire Engine Co., \$12,000 and \$10,000, respectively, on sizes; Robinson Fire Apparatus Co., triple combination hose wagon and fire engine, \$9,000 and \$8,500, respectively, on sizes.

BRIDGES

Texarkana, Ark.—St. Louis Southwestern Railway has submitted plans to city officials for proposed viaduct to be constructed to connect city proper with Carmichael Hill, spanning railroad yards and tracks at Oak st. crossing; viaduct about 1,500 ft. long; cost \$200,000.—F. H. Britton, St. Louis, Mo., General Manager.

Grindley, Cal.—Butte County Commissioners will consider erection of bridge over Butte Creek.

Los Angeles, Cal.—Plans have been completed for construction of concrete bridge at Vermont ave.—Homer Hamlin, City Engineer.

Marysville, Cal.—Yuba County Board of Supervisors, P. J. Divver, Chairman, will consider erection of bridge at Nigger Jack.

Oakland, Cal.—Board of Supervisors has adopted resolution accepting plans for construction of concrete bridge on Stockton Pass road, near Mission San José and for a concrete bridge over Dry Creek on the road from Niles to Alvarado; also plans and specifications for a wooden bridge on county road No. 1007, between Haywards and Roberts Landing, San Lorenzo road district; bids asked.

Yreka, Cal.—Trustees have advertised for bids for reinforced concrete bridge across Humbug Gulch, on Oregon st.

Colorado Junction, Col.—Citizens of Clifton, White, Water, Orchard, Mesa and Palisade have petitioned County Commissioners for appropriation of \$15,000 for construction of bridge connecting Orchard and Mesa with Clifton.

Wilmette, Del.—Plans have been completed for construction of a bridge across Smyrna Creek to connect counties of Kent and New Castle.

Moline, Ill.—Rock County Supervisors have rejected estimates for \$60,000 instead of \$37,000 bridge at Colona.

Iola, Kan.—Allen County will vote in November on erection of two bridges; cost about \$8,000 each.

Kansas City, Kan.—Plans have been prepared by the Kaw Valley Drainage Board and Wyandotte County Commissioners for

construction of 5th st. and 12th st. bridges.

Westernport, Md.—Citizens have voted \$5,000 bonds for bridge over Potomac connecting with Piedmont.

Fall River, Mass.—Cost of proposed low bridge over New York, New Haven and Hartford Railroad tracks has been estimated at \$23,000; plans prepared.

Menominee, Mich.—Council has appropriated \$8,700 for building of a new bridge over Menominee River; a similar appropriation will be necessary from Marinette before bridge can be built.

Kearny, N. J.—Rebuilding of bridge over Erie Railroad on Kearny ave. is being urged.

Ocean City, N. J.—Cape May County Freeholders have instructed their engineer to draw plans and specifications for bridge over Great Egg Harbor Bay.

Cincinnati, O.—Plans and specifications have been ordered by County Commissioner for a concrete bridge over Mill Creek at Cooper ave., Lockwood, to cost \$17,957.

Franklin, Pa.—County Commissioners have decided not to rebuild McQuaide bridge over Sugar Creek, and have rejected all bids; plan has been formulated by local engineers whereby floor system of the bridge can be so reconstructed as to make a good substantial crossing place at low cost.

Meadville, Pa.—Mayor Graff has recommended election Nov. 8 on \$9,500 bonds for bridges over Mill Run.

York, Pa.—County Commissioners have decided to build county bridges across Muddy Creek at Brogueville, between the townships of East Hopewell and Chanceryford, and Fishing Creek, in Newberry Township; also to build bridge across stream at southern entrance to Dover Borough; stone arches will be enlarged and concrete surface constructed.

Burnet, Tex.—Burnet County will vote Oct. 22 on \$18,000 bonds for construction of two bridges across Colorado River.

Palestine, Tex.—City Commissioners have adopted resolution offered by Commissioner Watts to build substantial bridge across Crawford st.

Richmond, Va.—Council has appropriated \$2,000 for competitive designs for construction of a new structure to replace the present Mayo's bridge; cost, \$250,000.

Wheeling, W. Va.—Road and Bridge Committee of County Engineers has instructed A. S. Bell, County Road Engineer, to prepare plans and specifications for rebuilding Bethany pike bridge.

Superior, Wis.—Board of Public Works has been authorized by Council to secure estimates on building of bridge over Nemadji River at W. 4th st.

CONTRACTS AWARDED

Carlisle, Ky.—Elk Creek bridge, to Empe Bridge Co. of West Virginia, \$2,025; to same company, to erect bridge over Brushy Fork Creek.

Carthage, Mo.—Constructing bridges as follows: To Illinois Steel Bridge Co., of Jacksonville, Ill., for bridge at Margrave Ford, over Little North Fork, Jasper Township, \$4,350; to Vincennes Bridge Co., of Vincennes, Ind., for Hall Ford bridge, \$11,646, and to Massillon Bridge Co., of Massillon, O., for Scotland Bridge, over Grove Creek, Jackson Township, at \$6,312.

White Creek, N. Y.—Constructing a 60-ft. reinforced concrete arch bridge over Owl Kill, near Eagle Bridge, to Jas. Austin Mortland, city.

York, Pa.—By County Commissioners, to Hartley-Ziegler Co. for rebuilding of condemned College ave. bridge, \$23,278.

BIDS RECEIVED

Augusta, Me.—Construction of bridge over St. John River between Van Buren in Aroostook County and St. Leonards, N. B., including superstructure, foundations and abutments: Substructure, Eli Roy, Lewiston, \$22,254; Powers Brewer, Grand Falls, N. B., \$23,895; E. J. O'Kelly, Toronto, \$25,145; and J. L. Perkins & Son, Fairfield, \$30,589; superstructure, Canton Bridge Co., Canton, \$51,082; Boston Bridge Co., \$47,452; Pennsylvania Steel Co., New York, \$50,000; Penn Bridge Co., Beaver Falls, Pa., \$40,991; appropriation, \$37,000; New Brunswick to spend equal sum.

MISCELLANEOUS

Fort Smith, Ark.—Fort Smith Market and Shippers' Association will urge erection of municipal market; plans being prepared.

Sarasota, Fla.—Bids will be received not later than Oct. 20 for erection of concrete reinforced sea wall about 800 ft. long and average above ground 3½ ft.—J. W. Philip, City Engineer.

Washington, D. C.—American Consulate at Rangoon, India, desires to be supplied with catalogues of oil well supplies, cotton

The FLASHLITE System

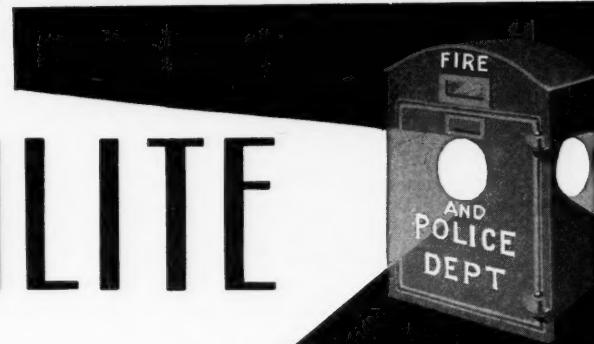
A Combination Police and Fire Box, with three powerful red lenses that are visible from three directions for at least 500 yards in the day-time and for miles at night.

The boxes are located in each district, so at least one light is always within line of vision of the officer on that beat.

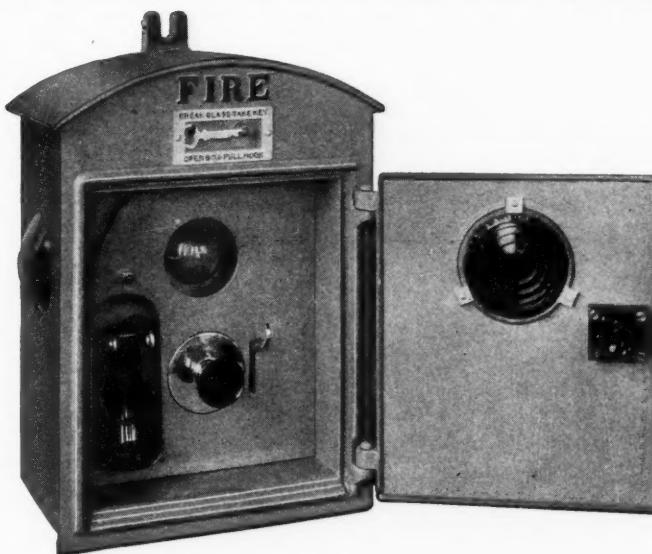
The telephone part of the equipment is of the best quality. All noisy lines and interruptions are completely removed.

The Patrol Flashlite system has passed the experimental stage. All installations are giving satisfactory results. The patrol boxes are heavily constructed and are neat in appearance. The outer door forms a moisture proof covering when closed.

The Patrol Flashlite system can be purchased outright and at a reasonable price, or a complete system may be installed and maintained, on a rental basis. Write us for details.



Calls the patrolman, sends in fire alarms, registers the roundsman on a ticker tape at headquarters, calls the patrol wagon, and has a telephone.



FLASHLITE

The distinctive feature of this apparatus is the FLASHLITE idea. It enables police headquarters, at any time of the day or night, to reach any roundsman instantly. Simply throwing a little switch lights powerful red lamps on any beat or all over the city. This signals the officers to come to the telephone for instructions.

RESERVES

Just think of it—you could assign your station reserves to regular beats and still be able to reach them as promptly as though they were asleep in the next room. The Patrol FLASHLITE System more than trebles the efficiency of your force.

FIRE ALARMS

The illustrations show the location of the public key compartment. The hook is pulled in the usual manner—nothing new or confusing. The police are also notified along with the fire department. The lamp lights when the alarm is sent in and is extinguished when the fire chief replaces the broken glass. Illuminated flash-light pilots fire department.

REGISTRATION

Roundsmen's reports are automatically printed on a ticker tape at headquarters, by simply pulling the hook—the fire alarm circuit does not operate until the glass is broken. The telephone is not used in reporting. Constant attendance is not required at the headquarters' switchboard—the automatic registrations become indisputable records of each beat.

WAGON CALL

The wagon is called by depressing the button over the receiver, after the registration hook has been pulled. No telephoning necessary.

TELEPHONES

The talking apparatus is the standard Dean Electric Indestructible equipment. Dean telephone apparatus is well known all over the world by up-to-date telephone men. Ask any Independent telephone man. The Dean Electric Company is an old established concern—see Dun's or Bradstreet's.

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Elyria, Ohio, U. S. A.



Front View of Switchboard at Police Headquarters

ginning machinery, drilling machinery and oil refining plants. Address No. 5562, Bureau of Manufactures.

Atlanta, Ga.—Fulton County Commissioners will erect barracks for women convicts; also stable.

De Kalb, Ill.—De Kalb County has decided to build jail and sheriff's home.

Moline, Ill.—Rock County Supervisors have rejected proposal to build jail.

Kendallville, Ind.—Council has decided to purchase street sweeper and dump wagon; committee appointed to visit Studebaker factory at South Bend and investigate cost of sweepers.

Topeka, Kan.—Shawnee County will vote in November on \$50,000 fair ground improvement bonds.

Hickman, Ky.—Business men are considering building large levee to protect West Hickman.

Lawrence, Mass.—Board of Aldermen has passed order authorizing \$1,000 appropriation for a horse and ambulance to cover South Lawrence district.

Springfield, Mass.—Councilman George W. Streeter, of Ward 3, will introduce an order in Council calling for the appointment of a joint committee of two Aldermen and three Councilmen to investigate and report on establishing one or more public sanitaries.

Duluth, Minn.—City Engineering Department is in need of automobile.

New York, N. Y.—Plans have been prepared for proposed Firemen's Memorial to be erected in Riverside Drive at 100th st.—Isidor Straus, Chairman Fund Committee.

Meadville, Pa.—Mayor Graff has recommended election Nov. 8 on \$18,000 bonds to purchase church building for city hall, with

needed repairs and \$3,000 for repairs and improvements to city market house.

Brownsville, Tex.—Mayor Kowalski is urging election on bonds for erection of addition to market hall, to be used as city hall.

Seattle, Wash.—At a cost of \$310,000 city next year will inaugurate a system of collection and destruction of garbage.

Tacoma, Wash.—Public Library Board will erect \$5,000 branch library at S. 56th and Puget Sound ave.

Calgary, Alta., Can.—Citizens have voted \$40,000 bonds for subway.—W. D. Spence, City Clerk.

Fredericton, N. B., Can.—Council is considering advisability of erection of market building.

CONTRACTS AWARDED

Birmingham, Ala.—Winter uniforms for fire department, to Louis Saks, \$24.05; 165 men need uniforms.

Oakland, Cal.—Contract for the construction of estuary quay wall has been formally assigned to Hansborough Bros. of San Francisco by Carterra Co.

Tampa, Fla.—Police uniforms, to Keller Clothing Co.

Boston, Mass.—Removing ashes in Ward 16, to Patrick J. Lyons, \$9,625; other bidders, Eugene Sullivan, \$8,750; John H. Winslow Co., \$9,938; John J. Loonie, \$9,968; to Coleman Bros., 15 Court sq., \$40,210 for soil work and renovation on Boston Common; other bidders, Charles J. Jacobs Co., \$44,173; James Driscoll & Son, \$42,225; Rowe Contracting Co., \$42,900; Thomas J. Kelly, \$45,240; M. J. O'Hern, \$59,490.

TOO LATE FOR CLASSIFICATION

STREET IMPROVEMENTS

Coalinga, Cal.—City is considering construction of about 121,000 sq. ft. of asphalt macadam.—F. J. Borland, City Engineer.

Ventnor City, N. J.—Citizens have authorized \$100,000 expenditure in making Atlantic ave. through this city into Ocean boulevard.

Greensboro, N. C.—Board of Aldermen has decided to pave Buchanan st. with vit. brick.

Grand Saline, Tex.—Citizens have defeated proposition to issue road bonds.

Provo, Utah.—Council has decided to grade and lay sidewalks on Fifth South st.

Brattleboro, Vt.—Public Service Commission has ordered Central Vermont Railway to build two sections of highway, eliminating Bridge st. crossing.

Spokane, Wash.—Council has passed ordinances for improvement of three streets.

Tacoma, Wash.—County will vote Nov. 8 on \$500,000 bonds for following: Liquidation of present indebtedness, \$100,000; improvements on old road to Puyallup, Orting, South Prairie and Buckley, \$100,000; road from Tacoma to Sherlock and Olympia, \$50,000; Lincoln ave.-Dash Point Boulevard and scenic highway, \$50,000; completion of Mount Tacoma Canyon Road, \$50,000; completion of the Tacoma-King County Road via Sumner, known as State Aid Roads No. 38 and No. 70, \$75,000; the Tacoma-King County Road via Edgewood, \$35,000 for the Gig Harbor, Purdy and Springfield Road, \$40,000.

Superior, Wis.—Cost of repairing E. Fourth st. bridge has been estimated at \$6,250.

CONTRACTS AWARDED

Oakland, Cal.—Curbing with redwood and macadamizing Third ave. to Oakland Paving Co.; grading street, including sidewalk, cutting, 2 cts. per sq. ft.; macadamizing, 6 cts. per sq. ft.; curbing with redwood, 12 cts. per lin. ft.; gutters grouted, broken rock, 12 cts. per sq. ft.

Mankato, Minn.—Paving Saulpaugh alley with brick to T. R. Coughlin, \$1.97 per sq. yd.

Erie, Pa.—Experimental pavement on West Lake Road to C. T. Eastburn, Yardley, \$6,307.20.

Dallas, Tex.—Paving Market st. from Jackson to Pacific, with vitrified blocks, asphalt filler, 2-in. sand cushion, 6-in. gravel concrete foundation, to D. J. Grigsby, \$2.75 per sq. yd., 5,340 sq. yds. of paving, of which the street railway will pay for \$26 and the city about 1,505 sq. yds.; Municipal Paving Co. bid \$2.75, and Texas Bitulithic Co., \$2.73; to Mr. Grigsby was given the contract for the same character of paving on Griffin st. \$2.65; total, 6,083 sq. yds., of which the Texas & Pacific Railway will pay for 207 sq. yds. and city for one-third of the rest; Texas Bitulithic Co. bid \$2.73; on same specification Mr. Grigsby obtained contract

for paving Main st., \$2.75 per sq. yd.; 2,760 sq. yds., of which the railways will pay for 712 sq. yds.; city's part will be \$1,877; Texas Bitulithic Co. bid \$2.75.

Seattle, Wash.—Woodland Park ave. grading, to W. F. Manney & Co., \$14,064; alley in block 8, Randell's Addition, grading, to Will Kopta, \$1,125.

BITES RECEIVED

Moline, Ill.—Building road to Rural: (a) 1st section; (b) 2d section: M. C. Conners & Co., Chicago (a) \$8,933.60, (b) \$7,415.55; McCarthy Improv. Co., Davenport, (a) \$8,761.80, (b) \$7,562.87; W. I. Kettewell, Iowa City, (a) \$6,287.85, (b) \$5,226.88; Littig Bros., Davenport, (a) \$8,761.80, (b) \$9,887.40; F. J. Peterson, Davenport, (a) \$11,167.00, (b) \$9,338.10; engineer's estimate, (a) \$7,072.76; (b) \$5,639.

Scranton, Pa.—Paving Larch and Linden sts., Costello Court, Forest Court and Dupont Court: MacDonald Construction Co.'s price on all jobs with exception of Linden st. was \$1.80 per sq. yd., and on the Linden Court job, \$1.82; Warner-Quinal Co. bid \$1.95 per sq. yd. on all contracts except Linden st.

Salt Lake City, Utah.—Curb and gutter extension No. 15, G. E. Palm, \$2,700.10; Gilkerson & Long, \$2,851.21; J. D. Hanley, \$3,033.73; McKay & Reed, \$3,155.17.—G. F. McGonagle, City Engineer.

SEWERAGE

Waterville, Conn.—Board of Aldermen is considering installation of sewers.

Hampton, Ia.—Bids have been rejected for installation of sewage disposal plant.—W. H. Leckey, City Clerk.

North Andover, Mass.—Town has sold \$15,000 sewer bonds to E. M. Farnsworth & Co.

Paterson, N. J.—West Paterson residents are urging construction of sewers. Jas. Walters is interested.

Meadville, Pa.—Council has passed ordinance for construction of sewer on Alfred st.

Portsmouth, Va.—Sixth Ward Improvement Board is considering replacing of drain pipe on Upper High st. at cost of \$1,500.

Richmond, Va.—Bids have been rejected for constructing proposed Dooley Ravine sewer.

CONTRACTS AWARDED

Oakland, Cal.—Sewering portion of Daly ave. to Esterly Construction Co.; furnishing and laying 12-in. pipe, \$1.35 per lin. ft.; 16-in. pipe, \$1.65 per lin. ft.; constructing brick manholes, with covers, complete, \$40 each; constructing catch-basins, \$25 each; 30-in. concrete sewer, \$3.15 per lin. ft.

Eagle Grove, Ia.—Sewer on Commercial ave. to Anderson & Co., \$1.50 per lin. ft.

Boston, Mass.—Building sewers on Rockdale and Rosewood sts. to J. C. Coleman & Sons Co., 15 Court Square, \$3,708.

Ft. Lee, N. J.—Building sewers: Dead

Newark, N. J.—Shelter house at Eagle Rock Reservation, to Frederick Kilgus, \$23,794; plumbing and heating, to Alphonso Taffo, \$1,830.

Scranton, Pa.—Comfort station in West Scranton Park, to Richard Latcham, 1119 Rock st., \$1,035.

Sherman, Tex.—Street sweeping, to T. C. U. Holmes, \$65 per month.

BIDS RECEIVED

New Orleans, La.—Construction of a sea wall at Lakeside Park, West End, J. D. McGee, Greenville, S. C., lowest bidder; piles in place, \$7.40 per pile; sheet piling per M ft., \$21.60; the rods, \$1.40 per rod; excavation, 40c. per cu. yd.; reinforcing rods per lb., 2.25c.; concrete in place, 29.4c. per cu. yd.; lowest bid for filling behind the wall, Home Dredging Co., Mobile, Ala., at 11.37c. per cu. yd.

New Orleans, La.—Erection of branch building for the New Orleans Public Library on Canal st., John Reusch, \$23,490; John O. Chisolm & Co., \$25,650; John Minot, \$23,950; R. McCarthy, Jr., \$26,174; Robert E. Ward, \$24,972; F. A. Noulet & Son, \$26,149; John W. Lennox, \$23,975.

Fall River, Mass.—Construction of new hospital: P. Corrigan, \$11,359; J. H. McCarthy, \$12,424; Mitchell Nicholson, \$12,738; A. W. McQuillan, \$10,684; McNally Construction Co., \$12,898; William Dacey, \$11,263; Daniel Moore, \$11,948; William A. Borden, \$12,000.

Syracuse, N. Y.—Comfort station at Frazer School, Shanahan & Posthill, \$3,170; J. J. Sherlock, \$2,150.

WATER SUPPLY

Douglas, Ariz.—Cost of proposed water works improvements has been estimated at \$84,800.—E. T. Archer, Kansas City, Mo., Engineer; D. F. Johnson, City Clerk.

Thomaston, Ga.—Election on bonds for installation of water works system is being considered.

McLeansboro, Ill.—Citizens will vote in November on \$16,000 bonds to construct water works.—G. C. Harvey, Mt. Carmel, Engineer.

Mulliken, Mich.—Construction of water works is being considered.

Libby, Mont.—Citizens have voted \$16,000 water works bonds.

Grand Forks, N. D.—City is considering building of temporary dam to insure sufficient water supply to carry city through winter.

Cleveland, O.—City will extend water mains to Warrensville at cost of \$60,000.

Maumee, O.—Citizens will vote Oct. 17 on \$45,000 bonds to construct municipal water plant.

Baltic, S. D.—Construction of water works is being considered.

Brigham City, Utah.—Electric Light Committee has estimated cost of installing another unit at \$7,814.50 for the necessary machinery and \$800 for the enlargement of power house.

Spokane, Wash.—Council has passed ordinances for water mains in Dist. No. 563.

Spokane, Wash.—Plans for pumping station at Lincoln Heights reservoir, to take the place of present Grand boulevard and Fourteenth ave. pumping station when reservoir is completed, are being prepared by Water Department; Water Commissioner George W. Armstrong and Engineer A. Lindsay will recommend appropriation of about \$8,000 to cover cost of new plant.

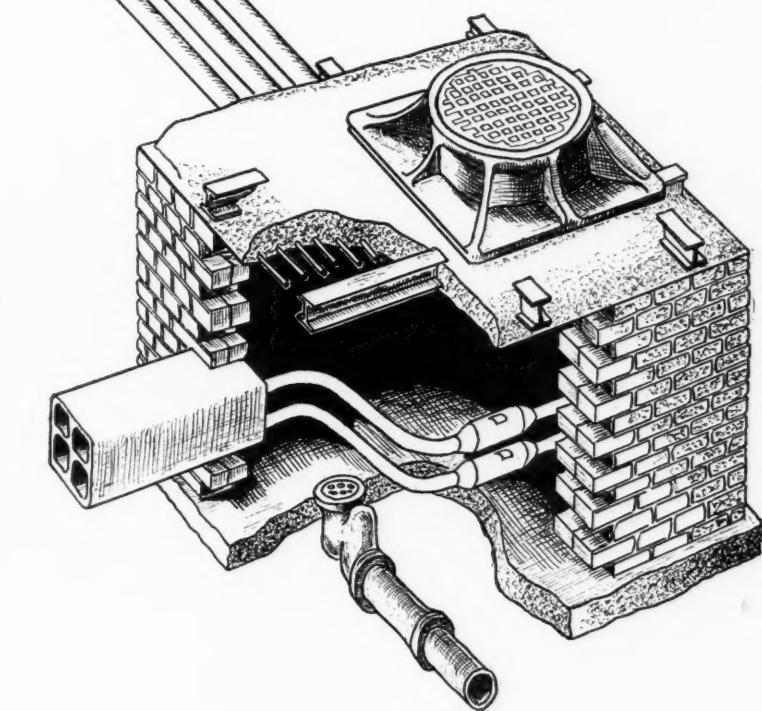
Yacolt, Wash.—Citizens have voted \$10,223 bonds for gravity water system.

Wheeling, W. Va.—Plans have been prepared by Consulting Engineer Kommer for water supply system for Wheeling Heights; cost, \$20,000.

Do You Know that there are 17 distinct types of underground electrical conduits on the market today and in use throughout the country?

Do You Know that for each of these types 20 well defined methods of encasement and protection are employed?

Do You Know which particular conduit and method of encasement is the most economical for you and the one your situation calls for?



We Do!

Better consult us before going ahead and spending good money on your conduit system.

CONSTRUCTION DEPARTMENT

THE SAFETY INSULATED WIRE & CABLE CO.

Conduit Builders and Installers of "Safety" Underground Cables and Accessories

114 LIBERTY STREET, NEW YORK CITY

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Connecticut	Waterford	Oct. 8, 3 p.m.	Macadamizing a section of Great Neck road; \$1000 cert. check	Albert H. Lanphere, Chm. Selectmen
Nebraska	Hastings	Oct. 10.	Paving 2d st., from St. Joe to Wabash ave., more work later.	C. A. Heartwell, City Engineer
Oklahoma	Enid	Oct. 10, noon	Grading 22d and E. Main sts., 32 ft. wide, York ave., 40, alley, 20 ft.	E. R. Lee, City Clerk
Massachusetts	Boston	Oct. 10, noon	Constructing macadam roadway in Old Colony ave., So. Boston	Louis K. Rourke, Supt. of Streets
New York	New York	Oct. 13.	Furnishing and delivering Medina of Potsdam sandstone paving blocks at Williamsburg Bridge.	Kingsley L. Martin, Bridge Comr.
New York	Fort Niagara	Oct. 31, 11.15 a.m.	Building concrete walks, macadamized and clay roads at Fort.	Lieut. E. H. Wagner, U. S. Army
Florida	Jacksonville	Nov. 1, 9.30 a.m.	Grading, curbing, paving 20 miles hard-surface County roads.	Gail L. Barnard, County Engineer
SEWERAGE				
Florida	Clearwater	Oct. 15, noon	Building sewer system: 24 mi. 8 to 15-in. pipe, flush tanks, etc.	Thos. J. Sheridan, Town Clerk
New York	Westfield	Oct. 21.	Sewers, 57,518 ft. 8-24-in. pipe, 143 manholes, 23 flush tanks, sewage disposal plant, C. C. Hill, Northeast, Pa., Engineer.	J. A. Riley, Village Clerk
Georgia	Atlanta	Nov. 1, noon	Building Proctor Creek sewage disposal plant near city, \$5000 check.	R. M. Clayton, City Engineer
WATER SUPPLY				
Massachusetts	Boston	Oct. 7, noon	Laying 3200 ft. 30-in. and 1250 ft. 24-in. pipe, East Boston	William E. Hannan, Water Comr.
North Dakota	Bowbells	Oct. 10, 7 p.m.	Building water works system in Main and Third sts.; steel tower and tank, concrete pump house, pump and pumping engine.	F. J. Kroman, City Auditor
Kentucky	Louisville	Oct. 11, 11 a.m.	Furnishing water tube boiler, arranged in single setting.	Theo. A. Leisen, Supt. Water Co.
Pennsylvania	Harrisburg	Oct. 18, 4 p.m.	Furnishing and install. gas and electric power pump, machinery, etc.	John A. Affleck, Pres. Wtr. & Lt. Bd.
Ohio	Athens	Oct. 22, noon	Furnishing and install. two 150 h.p. boilers, 22x80 ft. standpipe, system of steam and water piping, also hydrotherapeutic plant, State Hospital.	Osborne Eng. Co., Arcade, Cleveland
BRIDGES				
New York	New York	Oct. 13.	Repairing fender of Willis ave. bridge over Harlem river.	Kingsley L. Martin, Bridge Comr.
California	Los Angeles	Oct. 24.	Building concrete arched bridge, approaches, roadway and fence over Arroyo Seco, at Pasadena ave. extension, length, 1400 ft. with Y at one end, average width at top, 50 ft., inc. 16-ft. railroad right-of-way; concrete bridge will be 165 ft. long, 75 ft. wide with 2 arches each with 60-ft. span and 34 ft. clear height, cost, \$128,000.	C. G. Keyes, County Clerk
STREET LIGHTING AND POWER				
New York	Buffalo	Oct. 11, 3 p.m.	Header mains and underground feeder cables at Buffalo State Hospital.	State Comm. in Lunacy, Albany
MISCELLANEOUS				
Mississippi	Greenwood	Oct. 7, noon	Digging 20 miles open ditches, 484,000 cu. yds. excavating.	G. W. Holmes, Pres., Drain. Dist.
Brit. Columbia	Kaslo	Oct. 10.	Erecting a Court House, F. C. Gamble, Engineer.	Department of Public Works
Ohio	Rocky River	Oct. 14.	Erecting a municipal building; M. M. Gleichman, Arch., Clifd. W. M. Dean, Village Clerk	
Minnesota	Duluth	Oct. 31, noon	Building pierhead crib and riprap embankment at Ashland, Wis.	Graham D. Fitch, Col. U. S. Engrs.

CONTRACTS AWARDED

Rockport, Mass.—Two boilers for pumping station to Robb-Mumford Boiler Co., South Framingham, \$2,987.

St. Paul, Minn.—Heater and condenser at Centerville Lake to Robinson, Cary & Sands Company, St. Paul, \$2,300; special castings for pump to South Park Foundry and Machine Company, \$1,200.

Heavener, Okla.—Building water works to L. V. McFarland, Bartlesville, about \$50,000.

Erie, Pa.—Cement work at settling basin: Cement Products Co., excavation, per yd., 98 cts.; entire basin, \$24,892; concrete, per yd., \$8.50; entire basin, \$72,250; total, \$97,142. John F. Casey, Pittsburgh, excavation, per yd., \$1; entire basin, \$25,400; concrete, per yd., \$9.25; entire basin, \$78,625; total, \$104,025. O. S. Riblet, Erie, excavation, per yd., \$1.00; entire basin, \$25,400; concrete, per yd., \$7.00; entire basin, \$59,500; total, \$84,900. Jos. F. Stabell Co., Buffalo, excavation, per yd., \$1.50; entire basin, \$38,100; concrete, per yd., \$9.50; entire basin, \$80,750; total, \$118,850. T. A. Gillespie Co. awarded contract. Excavation, per yd., 35c.; entire basin, \$8,890. Concrete, per yd., \$8.05; entire basin, \$68,425; total, \$77,315.

Seattle, Wash.—Water mains on Fifteenth ave. N. E. to Ferguson Construction Co., \$10,559.20.

LIGHTING AND POWER

Benson, Ariz.—J. E. Collins, Tucson, is interested in proposed construction of electric light plant.

St. Charles, Mich.—Bids will be received Oct. 10, 8 p.m., for \$14,000 bonds for installation of municipal electric light plant; engineer not yet chosen.—C. H. Clipper, Village Clerk.

Albany, Ore.—Tri-State Railway & Power Co. has been granted franchise for electric power line from Eugene to this city.

San Marcos, Tex.—San Marcos Utilities Co. will build about 6 m. of new lines.—W. N. Jones, Manager.

Spokane, Wash.—Fire, Water and Sewer Committee will recommend adoption of plans for municipal power plant at upriver pumping station.

BIDS RECEIVED

Seattle, Wash.—Furnishing incandescent lights for city for year; all bids considered were same except that of the Novelty Incandescent Lamp Company, which was lowest by nearly \$2,000; firm was asked to appear before Board at its next meeting, and if it can show that it is qualified to

fulfill the terms of specifications will be awarded the contract. Other bidders on the lamp contract were: General Incandescent Lamp Company, General Electric Company, Reardon Electric Company, Western Electric Company, Central Electric Company, Columbia Incandescent Lamp Company, American Electric Lamp Company, Northwestern Supply Company and the Forbes Supply Company; the proposals of the General Incandescent Lamp Company and General Electric Company were rejected on account of their not being in compliance with specifications.

FIRE EQUIPMENT

Hastings, Neb.—Council is considering advisability of purchasing new fire fighting equipment.

Appomattox, Va.—Fire company will be organized and engine purchased.

Portsmouth, Va.—Fire Committee of Council has decided to recommend purchase of the Browder life-saving machine at a cost of \$120; Hart ladder pipe at a cost of \$120; "two way" Siamese connection with cost of \$22, to be used in connection with the ladder pipe; fuel wagon at a cost of \$150.

Spokane, Wash.—Bids will be received until 2 p.m., Oct. 21, for one combination hose wagon; also one No. 2 fire engine.—John Gifford, City Purchasing Agent.

MISCELLANEOUS

Henderson, Ky.—County proposes to expend \$20,000 in repairing jail.—S. A. Young, County Judge.

Binghamton, N. Y.—City is considering purchase of sewer cleaning machine and one dump wagon to be used in cleaning out catch basins.

Frederonia, N. Y.—Village Trustees have decided to advertise for bids for village heating plant.

Nome, N. D.—City has issued \$4,500 bonds to build hall, jail and fire house.

Toledo, O.—J. R. Cowell, Director of Public Service, will have plans prepared for market house.

Muskogee, Okla.—New plans will be prepared for erection of proposed city barns.

Portland, Ore.—Chamber of Commerce is urging election, Nov. 8, on bonds for public docks.

Bredmond, Tex.—Jail and court house building has been destroyed by fire.

CONTRACT AWARDED

Muskogee, Okla.—Auto patrol and ambulance to Cadillac Auto Co., Detroit, Mich., \$2,300; cage for prisoners will be constructed by W. R. Lantz, city.

PROPOSALS

SANITARY SEWERAGE SYSTEM

Change of Date

Clearwater, Fla.—Bids will be received by the Town Council of the town of Clearwater, Fla., until 12 o'clock noon, October 15, 1910, for constructing sanitary sewerage system. Extent of proposed work is approximately 2½ miles of pipe, 8 inches to 15 inches; manholes, flush tanks, etc.

Specifications may be obtained from the Town Clerk. Plans will be on file and can be seen at office of the Engineer. Certified check for 5 per cent to accompany bid. The right is reserved to reject any or all bids.

THOS. J. SHERIDAN,
Town Clerk,
Clearwater, Fla.

W. M. W. LYON,
Consulting Engineer,
305 Duval Bldg., Jacksonville, Fla.

SUBWAY AND ELEVATED RAILROAD

New York, N. Y.

Bids are invited for construction, equipment and operation of the Tri-Borough Subway and Elevated System of New York City, comprising about 44 miles of line, to be opened October 20, 1910.

Bids are also invited for construction only, with municipal money, to be opened October 27, 1910. Bids may be made for one or more of the sections into which the construction work has been divided.

Write or call concerning full details, including forms of contracts and plans.

PUBLIC SERVICE COMMISSION
FOR THE FIRST DISTRICT,
154 Nassau Street, New York City.

WATER WORKS

Oroville, Wash., Sept. 14, 1910.

Proposals for the furnishing of material and the construction in whole or in part of a water works system consisting of a well, pumping machinery, reservoir, and pipe line will be received until Monday, October 17th, by City Clerk of Oroville, Washington. The right is reserved to reject any and all bids. Information, plans and specifications will be furnished upon request.

E. S. TAYLOR,
Clerk of the Town of Oroville.